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ARS-139

August 1996

National Potato Germplasm Evaluation and Enhancement Report, 1995

Sixty-Sixth Annual Report
by Cooperators

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National Potato Germplasm Evaluation and Enhancement Report, 1995

Sixty-Sixth Annual Report
by Cooperators

Edited by Kathleen G. Haynes

Vegetable Laboratory
Beltsville Agricultural Research Center
Agricultural Research Service
U.S. Department of Agriculture
Beltsville, MD 20705

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United States Department of Agriculture, Beltsville
Agricultural Research Center, Beltsville, Maryland,
and Presque Isle, Maine
K.G. Haynes, R.W. Goth, and K.O. DeLong

Introduction

Objectives: The USDA potato breeding program at Beltsville has four main objectives: (1) to develop improved pest-resistant germplasm; (2) to develop improved germplasm for processing; (3) to enhance germplasm for specific characteristics relating to yield, environmental stress, human nutrition, and consumer acceptance; and, (4) to develop statistical genetic models for some of the new breeding strategies.

Breeding

Hybridizations in the greenhouses at Beltsville in early 1995 were made among tetraploid clonal material possessing resistance to late blight, scab, Fusarium and soft rot; high quality; and either processing and fresh market potential. Six hundred eighty crosses were successful. Bulk pollinations were made among 288 diploid clones from the high specific gravity population after these clones failed to produce fruit in the field in 1994.

Processing Evaluations

Yield trials for round whites (Tables 1-4), russets (Table 5), 4x-2x hybrids (Table 6) and specialty market types (Table 7) were conducted at Echo Lake. These were planted in a randomized complete block design with four replications of 25 hills from May 15-16. Plants were spaced 9 inches within the row for all trials except the russet trial, for which plants were spaced 12 inches within the row. At harvest tubers from each plot were graded, specific gravity was determined by the weight in air and weight in water method, and a sample of tubers was cut to determine the presence of hollow heart. Tuber samples were stored at 40 F, 45 F, and 50 F. Tubers were processed out of 45 F, 50 F, and following a three week reconditioning period of 70 F from cold storage at 40 F during January and February for the round white and russet trials. These same selections were also processed out of 40 F in January. Selections in the 4x-2x hybrid and specialty market trials were processed out of 50 F in December. For each combination of storage temperature and processing date, 5 tubers per sample

from each plot were processed (20 samples per clone).

Tuber samples from all yield trials except the russets were processed into potato chips by taking 1/16-inch slices from the cross section of each tuber. Slices were rinsed in water and placed on paper towels to remove excess moisture. Chips were then fried at 340 F in Primex vegetable shortening until bubbling ceased.

Almost all of the round white selections processed well in January from 50 F and 45 F. B1071-20 and B7200-33 were noticeable exceptions. None of the selections processed well from 40 F. However, B0178-34, B0717-1, B0766-3 B1016-3, and B1157-5 reconditioned well from 40 F storage. B0178-34 was the best processing selection from all three storage temperature regimes in February.

Tuber samples from the russet yield trial were processed into french fries. A 3/8-inch diameter plug was cut from the cross section of each tuber, rinsed, dried, and fried at 365 F for five minutes.

Four russet selections from the Beltsville program processed well from 50 F storage in January: B0835-11, B0915-3, B1004-8, and B9922-11. None of the selections or cultivars tested processed well from 40 F. Only one selection, B1004-8, processed well from 50 F, 45 F, and following reconditioning in January and February. B0767-2 is a russet potato with good resistance to late blight. Unfortunately, it is a low yielder and does not process.

Several of the selections in the 4x-2x yield trial yielded as well as Atlantic. However, only one, B1070-88, had a specific gravity equal to Atlantic. Three of the selections produced acceptable colored potato chips out of 50 F storage in December: B1066-23, B1068-78 and B1070-8. However, the low specific gravity of B1066-23 would limit its use in processing. B1070-88 inherited short tuber dormancy from its diploid parent. A few of these selections will continue to be evaluated for their fresh market potential.

The best yielding entries in the specialty market trial were Red Pontiac and B0967-11. B0967-11 is a round-oblong, purple-skinned selection with moderately high specific gravity. B0811-13 is a red-skinned, yellow-flesh entry with acceptable yields and only moderate specific gravity. The skin on B0811-13 tends to be heavy-netted, which may detract from

its appearance, or, conversely, may serve as an identifying cultivar characteristic for marketing as a yellow-flesh selection. Several growers have expressed an interest in this selection and will be evaluating it in 1996.

BARC Table 1. Yield, tuber size distribution, and quality characteristics of round whites harvested 125 days after planting at Echo Lake in 1995.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ²	HH ³
				<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	97	228	92	8.1	33.4	51.8	6.7	0.0	86	0
B0174-16	100	179	87	12.9	37.2	46.4	3.5	0.0	-	-
B0178-34	96	206	91	9.5	39.9	48.2	2.4	0.0	93	0
B0257-12	99	198	87	13.0	49.3	35.7	2.0	0.0	-	-
B0564-8	99	169	67	32.6	49.2	18.2	0.0	0.0	87	0
B0564-9	96	205	90	9.8	33.4	52.1	4.6	0.0	85	0
B0585-5	98	209	95	5.2	25.6	53.8	15.4	0.0	82	2
B0684-5	99	216	94	4.7	24.0	55.1	14.7	1.5	-	-
B0687-14	100	185	77	22.8	51.7	23.7	1.9	0.0	-	-
B0717-1	97	162	69	31.0	49.3	19.7	0.0	0.0	82	0
B0763-15	97	196	92	7.1	36.9	45.7	9.0	1.4	-	-
B0766-3	98	205	93	6.0	28.8	52.1	11.8	1.3	78	1
B0856-4	99	248	92	8.5	39.8	47.6	4.2	0.0	72	0
B0887-5	95	184	88	11.6	34.9	51.6	2.0	0.0	-	-
B0892-7	100	197	92	7.8	44.6	44.1	3.5	0.0	-	-
B1016-3	99	235	94	6.1	24.8	59.0	10.1	0.0	83	0
Norchip	98	157	85	14.7	53.6	28.3	3.4	0.0	85	0
Snowden	100	183	81	18.6	49.7	29.6	2.2	0.0	84	0
LSD (.05)			31							

¹% Stand on June 19, 1995

² 1.0 omitted

³ Number of tubers with hollow heart out of 40.

BARC Table 1. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Harvest
Atlantic	3	5	7	9	8	9	8	7	
B0174-16	2	5	7	9	8	9	9	8	Discard
B0178-34	2	7	9	9	9	9	9	7	
B0257-12	3	7	9	9	9	9	9	5	Discard
B0564-8	2	7	9	9	9	9	9	8	
B0564-9	2	7	9	9	9	9	9	9	
B0585-5	2	7	9	9	9	9	9	7	
B0684-5	2	5	9	9	9	9	9	5	Discard
B0687-14	3	7	9	9	8	9	9	7	Discard
B0717-1	2	7	9	9	5	9	9	8	
B0763-15	2	5	7	9	8	9	7	9	Discard
B0766-3	3	5	8	7	9	9	9	9	
B0856-4	3	7	9	9	8	9	9	7	
B0887-5	2	3	5	7	7	9	9	7	Discard
B0892-7	3	7	9	9	8	9	9	8	Discard
B1016-3	3	5	9	9	8	9	9	9	
Norchip	3	5	8	9	9	9	9	9	
Snowden	2	7	9	9	9	9	9	9	

⁴Tuber shape: NE-107 rating scale⁵Eye depth: “⁶Second growth: “⁷Growth cracks: “⁸Silver scurf: “⁹Heat sprouts: “¹⁰Greening: “¹¹Scab: “

BARC Table 1. Continued

Temperature	50°F	45°F	40°F	50°F	45°F	40°-70°F	50°F	45°F	40°-70°F					
Date	1/2	1/4	1/8	2/2	2/5	1/3	2/2	2/5	2/1					
Pedigree	Chip ¹²	Spt ¹³	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt				
Atlantic	6.2	S	6.3	S	9.8	O	8.3	S	6.3	L	7.3	M	7.9	M
B0174-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B0178-34	6.2	S	5.5	S	8.7	O	6.4	S	6.0	M	6.3	M	6.5	S
B0257-12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B0564-8	5.9	M	5.3	S	9.3	O	7.6	S	6.5	VL	6.8	L	7.4	M
B0564-9	6.5	S	6.3	S	9.5	O	8.5	S	6.8	L	7.0	M	6.8	S
B0585-5	5.8	S	5.8	S	8.8	O	7.7	S	6.0	M	6.1	M	7.2	S
B0684-5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B0687-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B0717-1	6.9	L	6.5	M	9.8	O	6.6	M	6.8	VL	7.3	VL	7.0	L
B0763-15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B0766-3	6.3	S	5.0	S	8.4	O	6.0	S	6.5	M	6.3	M	6.3	M
B0856-4	5.8	L	6.8	M	10.0	O	8.8	S	7.4	VL	7.0	VL	8.3	S
B0887-5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B0892-7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1016-3	6.9	S	6.5	S	9.6	O	7.0	S	6.5	S	7.3	S	7.7	S
Norchip	6.5	S	6.5	S	9.6	O	7.5	S	6.5	M	7.0	M	7.8	S
Snowden	6.3	M	5.5	S	8.6	O	5.5	S	6.3	L	6.8	L	6.8	M

¹²Chips 1-7 = satisfactory

¹³Sprout length: 0 = no sprouts, S < 0.5", M 0.5-1.5", L 1.5-2.5", VL > 2.5"

BARC Table 2. Yield, tuber size distribution, and quality characteristics of round whites harvested 125 days after planting at Echo Lake in 1995.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ²	HH ³
				<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	92	180	91	9.1	36.5	45.8	8.6	0.0	85	0
B1017-7	99	245	88	11.3	41.6	41.2	5.1	0.8	-	-
B1027-6	92	162	76	24.2	45.6	28.3	1.8	0.0	87	0
B1029-6	93	207	86	14.2	41.2	36.5	8.1	0.0	80	0
B1032-3	83	228	90	4.0	14.6	50.5	24.5	6.5	-	-
B1046-2	100	199	89	10.6	58.3	29.1	1.9	0.0	-	-
B1071-20	99	193	80	20.0	56.7	23.3	0.0	0.0	79	1
B1072-21	90	232	97	2.7	20.1	52.4	24.9	0.0	71	1
B1072-9	99	212	87	13.3	50.6	35.0	1.0	0.0	-	-
B1074-25	100	198	92	8.5	35.7	48.5	7.3	0.0	-	-
B1075-26	99	170	81	18.8	53.0	28.2	0.0	0.0	90	0
B1080-20	99	152	77	23.2	49.9	26.9	0.0	0.0	-	-
B1081-4	99	207	82	18.2	51.4	29.1	1.3	0.0	92	0
B1083-15	99	189	91	9.2	31.0	54.5	5.3	0.0	-	-
B1083-20	95	212	89	10.7	37.3	47.5	4.6	0.0	-	-
B1083-33	99	104	56	44.2	51.0	4.8	0.0	0.0	-	-
Monona	95	202	92	7.1	22.7	54.0	14.9	1.2	72	0
Suncrisp	100	239	92	7.5	32.1	49.7	10.7	0.0	82	0
LSD (.05)		44								

¹⁻¹³ See Table 1

BARC Table 2. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Harvest
Atlantic	2	5	9	9	9	9	9	9	
B1017-7	2	7	7	9	9	9	9	7	Discard
B1027-6	3	7	8	9	9	9	8	8	
B1029-6	2	7	9	9	9	9	9	7	
B1032-3	2	7	9	9	8	9	9	8	Discard
B1046-2	4	7	9	9	7	9	9	8	Discard
B1071-20	6	7	9	9	9	9	7	9	
B1072-21	2	7	9	9	8	9	9	7	
B1072-9	3	3	9	9	9	9	9	7	Discard
B1074-25	2	7	9	9	5	9	9	8	Discard
B1075-26	3	7	9	9	9	9	9	7	
B1080-20	2	7	9	9	8	9	9	7	Discard
B1081-4	3	7	9	8	8	9	9	8	
B1083-15	3	1	9	9	9	9	9	8	Discard
B1083-20	3	3	8	9	7	9	9	7	Discard
B1083-33	3	7	9	9	9	9	9	8	Discard
Monona	3	3	9	9	9	9	9	8	
Suncrisp	3	5	9	9	7	9	8	8	

BARC Table 2. Continued

Temperature	50°F	45°F	40°F	40°-70°F	50°F	45°F	40°-70°F
Date	1/2	1/4	1/8	1/3	2/5	2/5	2/1
Pedigree	Chip ¹² Spt ¹³	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt
Atlantic	5.7 S	7.4 S	10.0 O	8.1 S	7.6 M	7.5 M	8.4 S
B1017-7	-	-	-	-	-	-	-
B1027-6	5.8 VL	5.8 L	9.0 O	7.9 S	7.4 VL	7.3 VL	8.4 M
B1029-6	5.3 S	6.3 S	9.0 O	7.8 S	7.3 M	6.5 S	7.8 S
B1032-3	-	-	-	-	-	-	-
B1046-2	-	-	-	-	-	-	-
B1071-20	8.5 L	8.5 M	10.0 O	9.7 S	9.0 VL	8.7 VL	9.4 L
B1072-21	6.2 S	7.2 O	10.0 O	9.3 S	6.8 S	8.0 S	8.8 S
B1072-9	-	-	-	-	-	-	-
B1074-25	-	-	-	-	-	-	-
B1075-26	6.3 S	6.1 S	9.3 O	8.5 S	7.0 M	7.4 S	8.2 S
B1080-20	-	-	-	-	-	-	-
B1081-4	6.3 M	6.5 M	9.6 O	8.3 S	7.6 VL	7.6 L	7.5 S
B1083-15	-	-	-	-	-	-	-
B1083-20	-	-	-	-	-	-	-
B1083-33	-	-	-	-	-	-	-
Monona	5.8 S	5.5 S	8.6 O	6.3 S	6.5 M	6.8 S	6.4 S
Suncrisp	5.8 M	6.4 M	9.4 O	7.0 S	7.0 L	7.3 M	7.8 S

BARC Table 3. Yield, tuber size distribution, and quality characteristics of round whites harvested 125 days after planting at Echo Lake in 1995.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ²	HH ³
				<17/8"	17/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	95	262	96	4.1	28.4	54.4	13.1	0.0	87	1
B1084-45	96	223	93	7.5	46.5	43.9	2.1	0.0	-	-
B1086-3	99	170	71	29.2	50.1	20.7	0.0	0.0	-	-
B1086-43	94	165	84	16.2	49.7	34.2	0.0	0.0	-	-
B1087-3	97	179	79	21.4	44.9	33.3	0.5	0.0	-	-
B1088-36	99	184	86	12.8	37.1	44.3	4.7	1.1	-	-
B1088-37	98	280	92	3.4	17.8	56.4	18.0	4.5	79	0
B1089-42	100	241	85	15.5	50.6	33.1	0.8	0.0	-	-
B1090-19	98	202	89	10.8	54.4	33.0	1.9	0.0	97	0
B1091-29	98	200	84	16.2	44.5	36.0	3.4	0.0	92	0
B1093-21	97	236	90	10.2	45.5	44.3	0.0	0.0	90	0
B1093-46	94	217	92	8.0	28.1	56.9	7.0	0.0	77	0
B1094-47	96	175	82	17.8	40.6	39.7	1.9	0.0	-	-
B1098-29	100	153	86	14.0	37.3	40.5	8.2	0.0	-	-
B1098-30	96	192	86	13.7	53.2	32.6	0.4	0.0	93	0
B1098-32	95	204	87	13.4	44.7	37.7	4.1	0.0	87	0
B7200-33	95	230	87	13.3	47.5	37.8	1.4	0.0	75	0
Superior	95	230	96	4.1	25.1	55.2	15.5	0.0	82	0
LSD (.05)		32								

¹⁻¹³ See Table 1

BARC Table 3. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Harvest
Atlantic	2	3	9	9	9	9	9	9	
B1084-45	2	5	8	9	8	9	9	7	Discard
B1086-3	3	7	8	9	7	9	9	7	Discard
B1086-43	3	7	7	9	7	5	9	9	Discard
B1087-3	3	7	5	9	9	9	7	5	Discard
B1088-36	3	5	8	9	8	9	9	9	Discard
B1088-37	3	5	9	9	9	9	9	9	
B1089-42	2	7	5	7	8	8	9	8	Discard
B1090-19	3	7	9	9	9	9	9	9	
B1091-29	2	3	7	9	9	9	7	8	
B1093-21	3	7	9	9	9	9	8	5	
B1093-46	2	3	9	9	8	9	9	5	
B1094-47	2	3	9	9	8	8	9	9	Discard
B1098-29	3	7	8	9	8	7	9	9	Discard
B1098-30	3	5	9	9	9	9	9	5	
B1098-32	2	5	9	9	9	9	9	9	
B7200-33	3	9	9	9	9	9	9	5	
Superior	3	3	9	8	9	9	9	7	

BARC Table 3. Continued

Temperature	50°F	45°F	40°F	40°-70°F	50°F	45°F	40°-70°F					
Date	1/2	1/4	1/8	1/3	2/2	2/6	2/1					
Pedigree	Chip ¹²	Spt ¹³	Chip	Spt	Chip	Spt	Chip	Spt				
Atlantic	6.3	S	9.6	O	8.0	S	6.5	L	7.4	L	7.5	S
B1084-45	-	-	-	-	-	-	-	-	-	-	-	-
B1086-3	-	-	-	-	-	-	-	-	-	-	-	-
B1086-43	-	-	-	-	-	-	-	-	-	-	-	-
B1087-3	-	-	-	-	-	-	-	-	-	-	-	-
B1088-36	-	-	-	-	-	-	-	-	-	-	-	-
B1088-37	6.5	M	9.7	O	8.0	M	7.4	VL	8.3	L	8.5	M
B1089-42	-	-	-	-	-	-	-	-	-	-	-	-
B1090-19	6.3	M	8.3	O	7.3	S	7.1	VL	7.6	L	8.0	S
B1091-29	6.8	VL	9.9	O	7.8	M	7.3	VL	7.9	VL	8.2	M
B1093-21	5.9	S	9.4	O	7.2	S	6.3	L	6.5	M	7.5	S
B1093-46	7.1	O	9.4	O	8.6	S	6.8	M	7.8	S	8.4	S
B1094-47	-	-	-	-	-	-	-	-	-	-	-	-
B1098-29	-	-	-	-	-	-	-	-	-	-	-	-
B1098-30	6.0	L	8.6	O	7.7	S	6.5	VL	7.8	VL	7.5	S
B1098-32	5.5	VL	9.0	O	7.9	S	7.0	VL	7.5	VL	7.8	M
B7200-33	7.3	S	10.0	O	9.6	S	7.9	M	8.5	S	9.6	S
Superior	6.8	S	9.8	O	7.7	S	7.0	VL	7.6	M	7.9	S

BARC Table 4. Yield, tuber size distribution, and quality characteristics of round whites harvested 125 days after planting at Echo Lake in 1995.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ²	HH ³
				<17/8"	17/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Abnaki	99	250	92	7.6	38.4	46.5	7.5	0.0	75	0
Atlantic	92	257	93	5.3	20.6	59.0	13.5	1.7	86	1
B1083-51	96	244	91	6.5	36.0	46.4	8.4	2.7	86	1
B1099-5	95	194	89	11.3	32.6	49.2	6.8	0.0	-	-
B1106-2	99	253	93	7.3	34.7	50.3	7.7	0.0	-	-
B1110-10	99	220	89	10.7	42.6	42.9	3.8	0.0	-	-
B1110-11	100	252	91	8.8	33.1	45.3	12.8	0.0	86	4
B1110-5	96	214	88	11.5	35.3	44.7	8.5	0.0	-	-
B1111-9	98	194	75	25.0	39.9	32.0	3.1	0.0	-	-
B1137-1	100	59	48	52.1	44.8	3.1	0.0	0.0	-	-
B1150-5	98	223	77	22.7	46.8	27.0	3.5	0.0	65	0
B1157-5	99	177	79	20.7	49.9	28.6	0.9	0.0	84	0
B1158-11	97	240	96	4.1	20.2	67.2	8.5	0.0	-	-
B1158-4	90	211	95	4.3	15.2	65.6	14.0	1.0	-	-
B1166-6	99	244	93	6.6	40.6	46.8	6.0	0.0	-	-
B1171-2	97	253	85	14.7	53.1	31.2	1.0	0.0	-	-
B1191-2	100	260	95	5.1	32.8	51.6	10.6	0.0	-	-
Wauseon	97	241	93	7.3	24.3	52.9	15.6	0.0	70	0
LSD (.05)		36								

¹⁻¹³ See Table 1

BARC Table 4. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Harvest
Abnaki	2	5	9	9	9	9	8	9	
Atlantic	2	1	9	9	9	9	9	9	
B1083-51	2	7	9	9	9	9	9	8	
B1099-5	2	5	9	9	8	9	9	9	Discard
B1106-2	2	3	9	9	9	9	9	8	Discard
B1110-10	2	3	9	9	9	9	9	9	Discard
B1110-11	2	5	9	9	9	9	9	9	
B1110-5	2	5	9	9	9	9	9	8	Discard
B1111-9	2	5	9	9	9	9	8	7	Discard
B1137-1	2	7	9	9	9	9	9	9	Discard
B1150-5	3	7	9	9	8	9	9	9	
B1157-5	4	9	9	9	9	9	9	8	
B1158-11	3	5	9	9	8	9	8	9	Discard
B1158-4	3	3	9	7	5	9	8	9	Discard
B1166-6	2	5	9	9	9	9	9	9	Discard
B1171-2	3	7	9	9	8	9	9	9	Discard
B1191-2	2	7	9	9	9	9	9	9	Discard
Wauseon	2	7	9	8	9	9	8	9	

BARC Table 4. Continued

Temperature Date	50°F 1/2	45°F 1/15	40°F 1/8	40°-70°F 1/3	50°F 2/2	45°F 2/6
Pedigree	Chip ¹² Spt ¹³	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt
Abnaki	7.5 S	8.1 S	10.0 O	9.4 S	7.8 VL	8.8 M
Atlantic	6.0 M	6.8 S	9.9 O	7.9 S	7.3 VL	7.3 L
B1083-51	6.1 S	6.4 S	9.9 O	8.2 S	7.5 M	7.3 S
B1099-5	-	-	-	-	-	-
B1106-2	-	-	-	-	-	-
B1110-10	-	-	-	-	-	-
B1110-11	6.3 S	6.0 S	9.5 O	8.0 S	6.7 M	7.1 M
B1110-5	-	-	-	-	-	-
B1111-9	-	-	-	-	-	-
B1137-1	-	-	-	-	-	-
B1150-5	6.7 S	7.1 S	9.8 O	9.0 S	7.8 L	8.2 M
B1157-5	5.8 M	6.3 M	8.2 O	6.4 S	7.3 VL	7.1 L
B1158-11	-	-	-	-	-	-
B1158-4	-	-	-	-	-	-
B1166-6	-	-	-	-	-	-
B1171-2	-	-	-	-	-	-
B1191-2	-	-	-	-	-	-
Wauseon	6.9 S	7.2 S	9.9 O	9.2 S	7.0 L	7.8 S

BARC Table 5. Yield, tuber size distribution, and quality characteristics of russets harvested 126 days after planting at Echo Lake in 1995.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					HH ³	
				<2 oz	2-6 oz	6-10 oz	10-16 oz	>16 oz		
B0767-2	99	48	77	23.2	65.2	11.6	0.0	0.0	64	0
B0835-11	98	206	92	6.6	37.4	38.1	16.7	1.2	77	1
B0915-3	98	230	86	1.0	20.1	37.9	27.8	13.2	83	0
B0927-9SG	95	259	98	1.7	47.8	34.8	15.7	0.0	-	-
B0950-6	96	206	92	7.0	39.0	34.6	18.6	0.7	-	-
B1004-8	100	216	96	4.5	61.8	25.8	7.9	0.0	86	0
B1092-33	99	220	95	2.8	44.2	42.2	8.0	2.7	-	-
B1120-19	100	177	92	6.7	58.9	28.5	4.9	0.9	-	-
B9922-11	99	240	92	1.8	26.1	36.5	29.1	6.4	84	0
BeIRus	100	161	96	4.5	59.4	32.0	4.1	0.0	90	0
Coastal Russet	98	234	97	2.7	52.1	35.4	9.8	0.0	79	0
Frontier Russet	94	181	90	3.6	40.0	35.0	14.6	6.9	82	0
Lemhi Russet	99	256	96	2.4	38.8	33.8	23.5	1.5	81	0
NemaRus	100	237	89	3.8	47.3	29.8	12.3	6.8	75	0
Norgold Russet	100	235	94	5.7	49.9	29.1	15.3	0.0	73	0
Russet Burbank	100	223	90	5.9	54.4	28.3	7.1	4.3	76	0
Russet Norkota	100	215	92	2.7	41.6	32.9	17.6	5.1	76	0
Russette	97	207	96	1.1	37.5	37.1	21.5	2.8	88	0
LSD (.05)		36								

^{1-11, 13} See Table 1

BARC Table 5. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	SGr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Harvest
B0767-2	3	7	8	9	9	9	9	9	
B0835-11	3	5	9	9	9	9	9	7	
B0915-3	7	9	9	5	8	9	9	9	
B0927-9SG	3	9	9	9	9	9	9	8	Discard
B0950-6	4	7	9	9	8	9	9	7	Discard
B1004-8	3	7	9	9	8	9	9	7	
B1092-33	3	7	9	9	8	9	9	7	Discard
B1120-19	7	5	9	9	7	9	9	5	Discard
B9922-11	5	9	9	9	8	9	9	9	
BelRus	4	5	9	9	8	9	9	7	
Coastal Russet	5	7	9	9	7	9	9	9	
Frontier Russet	3	7	8	9	7	9	9	9	
Lemhi Russet	3	7	9	9	7	9	9	9	
NemaRus	3	7	9	9	7	9	9	9	
Norgold Russet	3	9	9	9	7	9	9	9	
Russet Burbank	4	5	5	9	5	9	7	9	
Russet Norkota	3	7	9	9	8	9	9	9	
Russette	3	7	9	9	7	9	9	9	

BARC Table 5. Continued

Temperature		50°F		45°F		40°F		40°-70°F		50°F		45°F		40-70°F	
Date		1/2		1/5		1/5		1/3		2/2		2/2		2/1	
Pedigree		Fry ¹²	Spt ¹³	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt
B0767-2		3.4	S	3.9	S	4.8	O	4.7	S	3.5	L	3.5	M	3.9	S
B0835-11		2.2	O	2.5	O	4.8	O	4.2	O	2.7	S	3.3	S	3.8	S
B0915-3		2.3	S	2.8	O	4.4	O	3.2	S	3.0	M	3.0	M	2.8	S
B0927-9SG		-	-	-	-	-	-	-	-	-	-	-	-	-	-
B0950-6		-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1004-8		2.1	M	2.8	S	4.6	O	2.6	S	2.7	L	3.0	L	1.9	S
B1092-33		-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1120-19		-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9922-11		2.5	S	3.3	S	5.0	O	3.3	S	3.1	M	3.3	M	2.7	S
BelRus		1.7	S	2.8	S	4.2	O	3.4	S	2.0	L	3.0	L	2.7	S
Coastal Russet		3.4	M	4.2	S	5.0	O	4.9	S	3.8	L	4.0	M	3.7	M
Frontier Russet		2.1	S	2.9	S	4.3	O	4.1	S	3.0	S	3.0	S	3.4	S
Lemhi Russet		2.5	S	2.8	S	4.6	O	3.4	S	3.0	L	3.1	S	2.8	S
NemaRus		1.5	L	2.6	M	4.9	S	3.4	S	2.8	VL	2.8	VL	2.8	M
Norgold Russet		3.3	M	4.1	M	4.9	O	4.5	S	3.4	VL	3.7	L	3.4	M
Russet Burbank		2.6	O	3.4	O	4.7	O	3.9	S	3.0	S	3.2	S	3.0	S
Russet Norkota		2.4	S	3.1	O	5.0	O	3.0	S	3.0	S	3.0	S	2.6	S
Russette		2.4	S	3.5	S	4.7	O	3.6	S	3.3	L	3.8	M	2.7	S

¹²Fry 1-3 = Satisfactory

BARC Table 6. Yield, tuber size distribution, and quality characteristics of 4x - 2x hybrids harvested 125 days after planting at Echo Lake in 1995.

Pedigree	Mkt		% Tuber Size Distribution						SG ²	HH ³
	% Stand ¹	CWT/A	%Mkt	<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	94	187	89	11.5	37.9	42.0	8.6	0.0	85	0
B1065-41	99	185	84	16.1	52.4	29.6	1.8	0.0	-	-
B1065-44	95	157	88	12.0	38.3	45.9	3.8	0.0	-	-
B1065-51	96	181	89	10.6	34.0	44.4	11.0	0.0	74	0
B1066-23	96	164	82	17.3	36.6	35.4	9.5	1.2	67	2
B1066-36	99	180	87	13.2	46.0	39.2	1.6	0.0	-	-
B1066-73	95	179	90	9.3	26.9	48.8	13.8	1.2	74	9
B1067-11	95	227	92	4.3	21.8	54.4	16.0	3.5	67	6
B1067-12	97	186	88	12.2	40.7	46.3	0.8	0.0	-	-
B1067-4	98	157	84	16.0	45.8	36.0	2.2	0.0	-	-
B1068-39	99	176	79	20.5	45.9	33.0	0.6	0.0	77	0
B1068-78	96	138	64	35.7	44.2	18.7	1.4	0.0	77	0
B1069-17	99	155	74	25.8	49.2	25.0	0.0	0.0	-	-
B1069-55	100	163	77	23.3	60.4	16.3	0.0	0.0	-	-
B1070-81	99	139	83	15.6	42.4	38.7	2.0	1.4	-	-
B1070-88	100	141	78	21.7	61.6	14.5	2.3	0.0	85	0
Denali	97	171	85	14.0	43.2	39.1	2.5	1.2	91	0
Superior	100	183	94	5.6	36.5	49.2	8.8	0.0	77	0
LSD (.05)			30							

¹⁻¹³ See Table 1

BARC Table 6. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	SGr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Harvest
Atlantic	2	3	9	9	9	9	9	9	
B1065-41	2	9	9	7	9	9	9	8	
B1065-44	3	9	9	9	8	9	9	9	Discard
B1065-51	2	5	9	9	7	7	9	7	
B1066-23	2	9	7	5	8	7	7	5	
B1066-36	3	7	7	9	8	7	9	7	Discard
B1066-73	2	9	9	7	7	9	9	5	
B1067-11	2	5	9	7	7	9	9	8	
B1067-12	2	3	9	9	9	9	9	7	Discard
B1067-4	2	5	9	9	9	9	9	3	Discard
B1068-39	2	3	8	9	7	9	9	9	
B1068-78	2	3	9	5	9	9	9	8	
B1069-17	2	9	9	9	8	9	9	9	Discard
B1069-55	2	1	9	8	9	9	9	7	Discard
B1070-81	2	5	9	9	9	9	9	9	Discard
B1070-88	3	7	9	9	8	9	9	5	
Denali	3	7	9	9	8	9	9	5	
Superior	2	5	8	9	9	9	9	8	

BARC Table 6. Continued

Temperature Date	50°F 12/15	Chip ¹²	Spt ¹³
Pedigree			
Atlantic	6.6	S	
B1065-41	-	-	
B1065-44	-	-	
B1065-51	8.4	S	
B1066-23	6.3	S	
B1066-36	-	-	
B1066-73	7.2	S	
B1067-11	8.0	O	
B1067-12	-	-	
B1067-4	-	-	
B1068-39	9.4	S	
B1068-78	6.9	S	
B1069-17	-	-	
B1069-55	-	-	
B1070-81	-	-	
B1070-88	7.0	L	
Denali	6.0	S	
Superior	6.6	O	

BARC Table 7. Yield, tuber size distribution, and quality characteristics of specialty types of potatoes harvested 125 days after planting at Echo Lake.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ²	HH ³
				<17/8"	17/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
B0811-13	100	227	90	9.5	37.5	46.7	5.5	0.8	75	-
B0852-7	97	206	89	10.3	37.9	44.6	6.3	0.9	72	-
B0903-2	92	245	93	7.1	29.8	57.3	5.7	0.0	-	-
B0967-11	94	275	95	4.8	29.8	52.3	13.2	0.0	82	-
B0967-4	100	190	78	21.5	45.3	32.4	0.8	0.0	-	-
B0972-10	99	187	91	8.9	41.0	48.5	1.6	0.0	81	-
B0984-1	99	222	93	6.7	30.3	59.0	4.0	0.0	81	-
B0984-3	98	215	91	6.8	37.6	46.1	7.7	1.8	76	-
B0985-1	84	128	87	12.8	52.2	31.5	3.4	0.0	70	-
B1102-6	98	167	84	15.8	47.0	35.6	1.7	0.0	-	-
B1145-2	100	141	82	18.1	57.9	21.6	2.4	0.0	75	-
La Rouge	97	248	93	7.3	26.5	54.1	12.0	0.0	71	-
Red LaSoda	99	268	92	7.0	25.8	51.0	15.5	0.7	72	-
Red Pontiac	100	276	94	5.1	20.0	55.4	18.5	0.9	66	-
Yukon Gold	91	199	95	5.2	38.0	53.3	3.4	0.0	89	-
LSD (.05)			40							

¹⁻¹³ See Table 1

BARC Table 7. Continued

Temperature Date	50°F 12/15		
Pedigree	Chip ¹²	Spt ¹³	Comments
B0811-13	6.5	O	red skin, yellow flesh
B0852-7	7.5	O	purple skin
B0903-2	-	-	purple skin
B0967-11	7.2	S	purple skin
B0967-4	-	-	purple skin
B0972-10	9.2	S	yellow flesh
B0984-1	6.4	O	red skin
B0984-3	6.8	S	yellow flesh
B0985-1	5.8	S	red skin
B1102-6	-	-	red skin
B1145-2	5.8	O	red skin
LaRouge	7.5	S	red skin
Red LaSoda	7.6	S	red skin
Red Pontiac	9.0	S	red skin
Yukon Gold	7.1	O	yellow flesh

BARC Table 7. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	SGr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Harvest
B0811-13	3	3	9	9	9	9	9	9	
B0852-7	2	7	9	5	5	9	9	9	
B0903-2	3	7	9	8	5	9	9	9	Discard
B0967-11	3	7	9	9	8	9	9	9	
B0967-4	5	9	9	9	8	9	9	9	Discard
B0972-10	3	7	9	9	9	9	8	9	
B0984-1	2	7	9	7	7	9	9	9	
B0984-3	3	9	9	8	9	9	9	9	
B0985-1	2	7	9	9	9	9	9	9	
B1102-6	3	7	9	5	9	9	9	2	Discard
B1145-2	2	5	9	7	9	9	9	9	
LaRouge	3	3	9	9	8	9	9	9	
Red LaSoda	3	1	9	9	8	9	9	9	
Red Pontiac	3	5	9	9	5	9	9	9	
Yukon Gold	3	9	9	9	8	9	9	9	

United States Department of Agriculture
Agricultural Research Service
Potato Genetics and Enhancement
Madison, Wisconsin

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Introduction

The USDA, ARS Potato Genetics and Enhancement Project is responsible for the exploitation of wild and cultivated potato species germplasm for introgression of selected traits such as extreme pest resistance, high solids, direct chipping and high yield in *Tuberosum* background and to share these materials with cooperating breeding and enhancement programs, and to study inter- and intraspecific crossing barriers and chromosome pairing relationships among wild and cultivated species. This report will deal principally with the enhancement and related research associated with this program.

Summary of Questionnaire Concerning National Cooperative Enhancement Effort on Potatoes

The USDA, ARS Potato Genetics and Enhancement Project was directed in 1989 to begin enhancement with the wild and cultivated species of potato. This new direction had its origin in the extensive contract screening done during the mid-1980s by the Inter-Regional Potato Introduction Project (IR-1) for high priority traits selected by the Potato Crop Advisory Committee. The success of that program lead ARS Administrators to recognized the need to translate this evaluation activity into useful forms for use by the breeding community and led to the establishment of a new project to serve as a bridge between the genebank and the user/breeding community.

At the beginning of this project a survey was sent out to 17 state, federal and industry scientists involved in potato breeding and/or enhancement to determine their interest in cooperating with this new program; to assess their interest in enhancement, and to determine the goals that would fit with their programs. As a result of that survey, goals were set for the next five years for this fledgling program.

This year, a new survey was sent out to cooperating breeding and enhancement programs, five years into this enhancement effort. The intent of this survey was to determine the needs of the community we are

attempting to serve and to see what changes in priorities may have occurred over the past five years. The cooperators were asked to indicate the various traits/resistances they were interested in enhancing--this covered insects, viruses, fungi, nematodes, bacteria, etc. They were also requested to indicate the goals of their breeding program. This included skin color, shape, table stock, processing, resistance to insects, viruses, nematodes, bacteria, fungi, and other traits. The 6-10 traits that their programs emphasized were also to be indicated, as were the stage/type of enhanced material they wished to receive, the number of clones/seedlings they could accept, parental materials they preferred we use, traits they were willing to screen for, the ten traits that showed highest priority for this enhancement program, etc. A critique of the present enhancement program was requested as was an overall assessment of the enhancement effort.

This survey was sent to 13 cooperators to garner their input. This was four less than the 1990 survey, which is reflective of the changes occurring in the potato breeding community at large in this country. Eight cooperators responded to this survey. The top two priorities for each group of resistances/traits that those surveyed wished to have us concentrate on were: insect resistance--Colorado potato beetle and aphid; virus--PLRV and PVY; fungi--late blight, early blight and *Fusarium* dry rot; nematodes--*M. hapla* and *M. chitwoodi*; bacteria--common scab and soft rot, and other traits--direct chipping, heat and drought and 2n gametes. There are some obvious changes noted compared to the 1990 survey. The most striking change occurred with regard to late blight which was only listed of interest in 1990 by one program, but by all programs in 1995. Colorado potato beetle resistance was of interest in 10 of the 12 programs in 1990, but only 4 of the 8 in 1995. Interest in *Verticillium* wilt resistance also declined in 1995 compared to 1990. Interest in common scab increased from 3 of 12 in 1990 to 5 of 8 in 1995. Direct chipping did not appear on our list in 1990, but 6 of 8 programs expressed interest in having us work on it in 1995.

The goals for the responding breeding programs remained essentially the same when the 1990 and 1995 surveys were compared, except in the bacterial and fungal diseases, and 'other traits' category when compared based on percentage of programs interested. Increased interest was noted for ring rot, bacterial wilt, common scab and soft rot. There also was increased interest in late blight and *Fusarium* dry

rot. There was increased interest in blackspot/bruising, diploids, direct chipping, dormancy and decreased interest in haploids and heat and drought resistance.

They were also asked to list up to ten traits that they would like us to give priority to. Eleven traits were listed which at least two programs ranked in the top ten. They were, late blight, cold chipping, early blight, *Erwinia*, common scab, yield, Colorado potato beetle, silver scurf, french fries, dormancy, and *Fusarium*. Clearly the top priorities were late blight and cold chipping which were chosen by the most programs and were ranked either first or second by most. These were followed by early blight, *Erwinia* and common scab.

All programs expressed interest in receiving materials as greenhouse tubers rather than field tubers and some expressed interest in true seed. There seemed to be a preference for receiving advanced materials. The quantity of material that was desired varied from 50-100 clones/seedlings to 10,000-20,000 with most falling between 500 to 5,000.

Finally, we asked each program to rate our performance based on a 1 to 10 scale, with 1 being best. We were ranked 1 by one, 2 by two, and 3 by six programs for an average of 2.5. Given the information provided by this survey, we hope to be able to satisfy our cooperators better in the next five years. Our goals will be altered to reflect the change in needs, emphasizing late blight, cold chipping/frying, early blight, *Erwinia* and common scab. We will also work with individual programs which have significant needs that we are able to help with. We will also endeavor to communicate more regularly with our cooperators through meetings such as NCR-84 and the American Potato Association, so we can keep one another better informed. Finally, we and our cooperators have a better idea of what each is capable of doing for the other. This last five years has been a learning and building process, that hopefully has laid a sound foundation for the future in this mutual enhancement effort. The key to our future success lies in our mutual cooperation in this endeavor. It is to that end that we will commit our efforts. We look forward to working with and serving those involved in this cooperative effort.

Incorporation of Cold Chipping (2 C) from Wild Potato Species

Wild potato species hold the key to many traits of

interest to the breeder. One of those traits explored is their ability to chip directly from 2 C cold storage. This characteristic of potatoes is of great interest to the chipping industry. Potatoes being stored at colder temperatures would reduce the need for sprout inhibitors, decrease heating costs associated with storage and reconditioning, reduce pathogen levels, and also increase storage life. The goal of this research is to generate materials which will chip directly from storage requiring no or minimal reconditioning time.

Haploid-species hybrid families were generated using 2x(2EBN) wild species as males in crosses to haploid or diploid females. The species were chosen based on their ability to chip acceptably from 2 C. It was later found that these same PIs had increased their acceptability rating after only six days reconditioning. Acceptable material has a score of 4 or less on a scale of 1 (light) to 10 (dark). The females were chosen for their fertility, ability to tuberize when crossed to wild species and others for their ability to recondition.

Twenty-eight families were screened to their ability to: 1) chip directly after three months of 2 C storage, and 2) chip after six days reconditioning at room temperature. These conditions were chosen based on the limited amount of germplasm put under these selection pressures. Acceptable clones were noted after direct chipping, but many more were realized after reconditioning. The family data can be interpreted in many different ways. One such way is to look at the combining ability of the species in crosses for direct chipping. In this crossing block, *S. raphanifolium* appears to be a superior species when looking at the family means. It was also observed that the diploid female, US-W 973 (Wis Ag 231) x *S. chacoense*, did quite well, out performing the haploids used. The diploid parent was used in four of the top five performing families for both direct chipping and after reconditioning.

This is of interest because the progeny derived from the combination of haploid US-W 973, with *S. chacoense*, and *S. raphanifolium* produce more favorable clones for direct and recondition chipping than the combination of haploid US-W 973 and *S. raphanifolium* alone. *Solanum chacoense* appears to be have a positive contribution for both direct and recondition chipping when added. This poses interesting questions regarding parental selection/combination and possible linkages between direct and recondition chipping.

This work has provided us with some promising and interesting results. Incorporating the cold chipping trait from the species appears not to be an easy task when combining with haploids alone. It is possible to do when looking at family H1, but the frequency of acceptable clones is low. The frequency of acceptable clones increases though with only six days of reconditioning; thus, indicating that some of this material has the ability to chip acceptably after a short reconditioning period. The hope is that this research will provide useful information to the breeding community and ultimately a new source of cold chipping germplasm.

Evaluation of Wild Species for Late Blight Resistance

Potato lines were evaluated for resistance to the potato late blight fungus (*Phytophthora infestans*) using a technique modified from Tooley. Isolates of *P. infestans* were obtained from W. R. Stevenson, Department of Plant Pathology, University of Wisconsin. Both the A-1 mating type (US 1 isolate) and the A-2 mating type (US 8 isolate) of the fungus were used. The abaxial (bottom) surface of an 18 mm leaf disc was inoculated with 2000 sporangia (spores) applied in a 10 μ l droplet. In some experiments less than the desired amount of sporangia was applied due to poor sporulation of the fungus. The A-2 isolate produces fewer spores than the A-1 isolate. In a test of three commercial cultivars the two susceptible to A-1 were 96 to 100 percent infected, the three susceptible to A-2 were 34 to 65 percent infected.

Twenty-three plant introductions (PIs) were evaluated for resistance to the A-1 mating type and 22 PIs to the A-2 type. The fungus did not sporulate on any of the PIs. Evaluations were from three experiments. In the first experiment, four PIs were tested for A-1 resistance. The four lines used as controls were 25 to 50 percent infected. The second experiment checked 19 PIs for A-1. The three cultivars used as controls were 75 to 83 percent infected. Resistance to A-2 was checked in the third experiment with 0 to 25 percent of the three controls infected. Inoculum used was 75, 50, and 15 percent of desired level, respectively, in the three experiments. The PIs tested for resistance to the A-1 mating type were *S. brachistotrichum* 283095; *S. bulbocastanum* 243504, 243505, 243506, 243508, 243510, 243512, 275192; *S. fendleri* 225661; *S. pinnatisectum* 184774, 186553, 186554, 275233, 275234, 275236; *S. stoloniferum* 161158, 161178, 195166, 205510,

230490, 239410; *S. trifidum* 283064, 283065; . The same PIs were tested for the A-2 type, except *S. brachistotrichum* 283095 which died.

Introgression of Resistance to Late Blight from Wild Species to Cultivated Potatoes

Incorporation of new sources of late blight resistance into cultivated potato (*Solanum tuberosum* ssp. *tuberosum*) is important for the success of future breeding. An important source of valuable traits are wild *Solanum* species; however, the success of introgressing genes of economic interest generally depends on the crossability among wild and cultivated plant species. While the majority of diploid wild potato species hybridize readily with *Solanum tuberosum* Gp *Tuberosum* haploids some diploid species categorized as 1EBN do not cross with tetraploid or diploid forms of Group *Tuberosum*. By manipulating EBN we can construct a viable crossing scheme. We can also use the double pollination technique combined with embryo rescue to overcome crossing barriers.

A total of 122 species from the Potato Introduction Station at Sturgeon Bay, WI exhibiting resistance to late blight were used. The group was a broad spectrum of 2x, 4x and 6x species with different EBN values. The seeds were grown under greenhouse conditions at Madison and Rhinelander, WI. A total of 13 varieties and 82 haploids were used. Preliminary crosses were conducted under greenhouse conditions. A total of 1,854 pollinations were made resulting in 16 fruit, 775 embryos or seeds and 376 plants. A larger crossing program was undertaken during the summer of 1995 at the UW Lelah Starks Potato Breeding Station, Rhinelander and the UW Agricultural Research Station, Hancock utilizing the cut-stem technique. In this effort, 7,619 crosses were made resulting in 203 fruit. Embryo rescue was used on 40 fruit yielding 173 embryos including some potential hybrids of *S. bulbocastanum*-haploid and *S. pinnatisectum*-haploid crosses. The screening of resistance to late blight and the determination of chromosome number of the progeny is in progress.

Crossability between Tetraploid Cultivars and Related Wild Species

The release of transgenic plants into centers of diversity has the potential for transgene escape into natural populations. Our study has endeavored to determine to which related wild species the potential

for escape exists. This has involved crossing cultivars to 115 wild species in both directions. One needs to take into account ploidy differences, EBN numbers and possible stylar barriers when examining hybridization. The EBN numbers are a useful predictor of crossability, but can be overcome by the presence of 2n gametes. We have attempted to determine the incidence of 2n gametes among the related potato species. This involved examining pollen samples for 2n gametes, and using the related species as females to determine whether or not 2n eggs were being produced. It is also important to determine in crosses that failed whether stylar barriers existed by examining styles for pollen tube growth. We made 11,236 crosses using the wild species as males and 4,741 crosses using the wild species as females over two years. This information is also directly applicable to the use of these same species in potato improvement.

We have determined that EBN's are indeed good predictors of potential hybridization, but can, with regularity, be overcome by 2n gametes. So the degree to which 2n gametes are present in a population of 2EBN species should be a useful predictor of potential crossability in the absence of stylar barriers. Out of 6,453 crosses made to 2EBN species, we harvested 278 fruit with an average of 4.1 seeds per fruit. The progeny from these crosses have not, as of yet, been examined for ploidy or fertility. As expected the 4EBN species cross very well with the cultivars barring any stylar barriers; out of 1,408 pollinations there were 106 fruit with an average of 38.5 seeds/fruit. The 1EBN species, as predicted, yielded few fruit and seeds (1,097 pollinations, 16 fruit and 34 seeds.)

An interesting way to look at hybridization from a possible transgene escape is to examine crossability geographically. For example, most Mexican species are 2x(1EBN), 4x(2EBN) and 6x(4EBN). One would expect no crosses with the 2x(1EBN) material, Series *Bulbocastana* and *Pinnatisecta*, but would expect crosses with the 4x(2EBN) material, Series *Longipedicellata*, if 2n gametes were present. The 6x(4EBN) species, Series *Demissa*, should hybridize in the absence of any stylar barriers. As expected none of the 2x(1EBN) crosses set any seed, and most of the 4x(2EBN) species did not hybridize except for *S. papita* which set 90 seed/fruit. This result is surprising considering the frequency of 2n gametes among the Series *Longipedicellata* (range 2-24%). It is also surprising since all of the crosses had pollen tubes reaching the ovary. This discrepancy may be

due to the relative number of pollen tubes reaching the ovary, some misdirection of the pollen tube in the ovary or sampling. Unexpectedly the 6x(4EBN) crosses did not set any seed; however, in a few of the crosses stylar barriers were observed. The one 4x(4EBN) cross proved to be very fertile resulting in an average of 44 seed/fruit. Stylar barriers, as evidenced by the pollen tube growth, exist to some degree among most of the Mexican species.

The species located in the northern region of South America (Series *Conicibaccata*, *Circaeifolia* and *Piurana*) include diploid and tetraploid species with EBN's of one and two, respectively. The incidence of 2n gametes should have allowed for hybridization with the tetraploids, especially as pollen tube growth in most crosses was into the ovary, but seed set was nonexistent for these crosses, perhaps explained by the same reasons as with the Mexican tetraploids. An interesting deviant was 2x(2EBN) *S. capsicibaccatum* in Series *Circaeifolia*. This cross resulted in one fruit with 25 seeds; it has yet to be determined whether or not these progeny are true hybrids or if the PI was correctly identified.

The southern region of South America includes Series *Acaulia*, *Cuneoalata*, *Megistacroloba*, *Commersoniana*, *Lignicaulia* and *Tuberosa* (wild). As expected by 2n gamete frequency, there was exhibited some crossability with the 2EBN diploids and tetraploids. The measured 2n gamete frequencies were generally quite high ranging from 1-41%. Seed set in most of these crosses was quite low -- fewer than one seed per fruit. However, in some crosses [cultivated 4x(4EBN) X *S. okadae*, *S. pampasense*, *S. sparsipilum* and *S. vernei*] there was considerable seed set, ranging from 12-70 seeds per fruit.

A potential application of this work is opening up some of the more difficult wild species for breeding via sexual hybridization. These crossing data will allow breeders to determine which species can easily be used for breeding purposes. Even though satisfactory seed set was not obtained in all of our crosses, it is hoped that the stylar data and 2n gamete data will allow the breeder to determine which species to attempt to incorporate into a breeding program. Of particular note are some of the Mexican species where there exists resistances and immunities to many different pathogens. For instance, *S. papita* and *S. hjertingii* exhibit some resistance to root knot nematode, *Verticillium* wilt, leaf roll and late blight. Therefore, it is hoped that this data will allow a breeder to more efficiently evaluate what germplasm

most likely will be able to be incorporated into his program.

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NORTH CENTRAL REGIONAL POTATO TRIALS

Gary A. Secor, Professor, Plant Pathology Dept.
and Bryce Farnsworth, Research Specialist, Plant
Sciences Dept., North Dakota State University
and Cooperators

Cooperators:

Alberta, Mr. Clive Schaupmeyer; Manitoba, Mr. Brian Rex; Ontario, Dr. S.T. Ali-Khan; Iowa, Dr. Bill Summers; Louisiana, Dr. Charlie Johnson; Michigan, Dr. Dave Douches; Minnesota, Jan Backlund; Nebraska, Dr. Alexander D. Pavlista; Ohio, Dr. Richard Hassell; South Dakota, Vacant; Wisconsin, Dr. Jiming Jiang. Indiana has withdrawn from the trials, and South Dakota did not have a trial in 1995 due to a staff vacancy. Technical assistance from Michael Schwalbe in North Dakota is appreciated.

This year marked the 45th year the North Central Regional Trials have been conducted. There are 9 states and three provinces in the trial.

Cultivars Recently Released:

In 1995, North Dakota released a cultivar: NorDonna (Selection No. ND1871-3R), whose parentage was ND206-1R x ND821-6.

Cooperating States and Provinces:

STATE OR PROVINCE	DATE PLANTED	DATE HARVESTED	TOTAL DAYS	
			TO HARVEST	I/D ¹
Alberta	5/19	9/27	131	I
Manitoba	5/18	9/18	123	D
Ontario	5/18	9/14	119	I
Indiana	No Trial			
Iowa	5/12	8/15	94	I
Louisiana	No Trial			
Michigan	5/9	9/16	130	I
Minnesota	4/27	8/21	116	I
Nebraska	5/16	9/18	121	I
North Dakota	5/15	10/10	148	D
Ohio	5/22	9/25	134	D
South Dakota	No Trial			
Wisconsin	4/27	9/26	152	I

¹ I = Irrigated (most irrigation was supplemental to rainfall) ; D = Dryland

Trial conditions: The overall objective of the trial is to test performance of advanced selections for uniformity over a wide variety of locations and environments.

In most cases, rainfall was supplemented with irrigation, but three sites were dryland (ND, OH, MB).

Entries: Entries were received from Minnesota, Michigan, Wisconsin and North Dakota. One Michigan entry (P84-13-12) was inherited from the closed Purdue University potato breeding program and not entered in all locations. Check varieties supplied by North Dakota were Norchip, Atlantic, Snowden, Dark Red Norland and Red Pontiac.

The entries were:

MN15620	long, pink chipper
MN16191	white table
MN16201	red table
MSB076-2	white chipper
MSA091-1	white chipper
MSB007-1	white table
P84-13-12	white chipper
ND225-1R	red table
ND2417-6	white chipper
ND2471-8	white chipper
W1149	white chipper
W1189	white chipper
W1242	white chipper

Total and US No. 1 Yield: In total yield, ND2417-6, MN16201 and Red Pontiac had the highest average yield and US No. 1 yield. All exceeded 400 cwt/acre total yield under irrigation. Under dryland conditions, ND2417-6, Atlantic and Red Pontiac were the top yielding entries. Note that irrigated and dryland data are reported separately. Average yields over 400 cwt/acre were reported for AB, NE and WI (North Central Regional Trial Tables 1 and 2).

Percent U.S. No. 1: MSB076-2 and MN15620 had the lowest percent US No. 1, and Atlantic, Red Pontiac and Snowden had the highest. All other entries ranged from 75% to 87% (North Central Regional Trial Table 3).

Maturity: Norland was the earliest maturing entry while W1149 and W1189 were the latest maturing (North Central Regional Trial Table 4).

Percent Total Solids: As shown in North Central Regional Trial Table 5, seven entries produced solids of

greater than 20%; one was 21%. Atlantic had the highest solids at 21.0%. MN16201, Red Pontiac and Dark Red Norland produced the lowest total solids, as expected.

Scab Reaction: Scab reactions of the entries can be seen in North Central Regional Trial Table 6. Scab was minimal in most sites, except MI and MN. The Ontario trial was grown under intense scab pressure.

Summary of Grade Defects: Grade defects are found in North Central Regional Trial Table 7. Freedom from external defects ranged from 80.6 - 94.4%, while freedom from internal defects ranged from 78.3 - 96.8%.

Chip Color: The chip color results can be seen in Table 8. Results are reported as Agron values or PCII Color Chart values. Chip scores are directly from the field; chip scores from long term storage were not available. As expected, tablestock potatoes did not chip well. Several selections, including MN15620, MSB076-2, ND2417-6, ND2471-8, P84-13-12 and W1189 chipped as well as the standards, Atlantic, Norchip and Snowden.

Overall Merit Ratings: Merit ratings are reported in Table 9. The following summary shows only the top five entries from 1995 and indicates the total points based on merit rating for these entries over the previous two years.

Total Points			
Selection	1993	1994	1995
ND2417-6	17	23	33
Atlantic	NE*	NE*	19
Snowden	NE*	NE*	18
ND2471-8	17	23	17
ND2225-1R	NE*	NE*	14

*Not Entered

North Central Regional Trial Table 1. Total Yield (cwt/acre) - 1995

Cultivar or Selection	Irrigated							Non-Irrigated				
	Alb	Ont	IA	MI	MN	NE	WI	Ave.	Man	ND	OH	Ave.
Atlantic	568	357	158	402	358	420	500	395	398	107	350	285
Dark Red Norland	453	322	151	335	363	408	466	357	241	81	222	181
Norchip	437	377	202	364	365	350	470	366	315	114	223	217
Red Pontiac	543	485	150	484	392	367	559	426	388	76	255	240
Snowden	316	397	198	419	347	476	505	380	312	101	236	216
Minn. 15620	418	317	144	232	352	438	392	328	306	117	213	212
Minn. 16191	424	498	196	509	394	371	654	435	288	175	282	248
Minn. 16201	492	379	248	478	485	408	491	426	333	108	239	227
MSA091-1	--	--	--	360	318	422	433	383	--	83	210	147
MSB007-1	--	--	--	264	316	469	372	355	--	101	188	145
MSB076-2	--	--	--	429	--	399	--	414	--	144	200	172
ND2225-1R	390	335	231	369	338	332	444	348	247	68	189	168
ND2417-6	494	478	286	511	443	441	498	447	382	134	318	278
ND2471-8	425	369	217	359	390	390	412	366	335	94	284	238
P84-13-12	--	--	--	279	352	346	369	337	--	64	238	157
W1149	380	--	151	485	267	406	446	356	337	133	190	220
W1189	286	--	209	350	265	464	474	341	283	97	226	202
W1242	343	--	137	453	329	471	500	372	298	90	227	205
Average	426	392	179	282	357	410	470		316	105	238	

North Central Regional Trial Table 2. U.S. No. 1 Yield (cwt/acre) - 1995

Cultivar or Selection	Alb	Man	Ont	IA	MI	MN	NE	ND	OH	WI	Ave.
Atlantic	492	341	301	117	353	338	399	88	248	463	314
Dark Red Norland	362	193	296	76	264	333	390	66	183	413	258
Norchip	278	211	324	133	269	333	334	78	194	409	256
Red Pontiac	472	352	403	100	401	366	339	60	204	535	323
Snowden	218	234	350	150	359	327	457	83	177	481	284
Minn. 15620	302	237	253	37	153	296	420	83	100	327	221
Minn. 16191	291	168	417	115	420	375	348	145	193	588	306
Minn. 16201	465	288	316	123	404	456	374	74	169	445	311
MSA091-1	--	--	--	--	299	294	397	43	138	386	260
MSB007-1	--	--	--	--	203	290	452	76	125	320	244
MSB076-2	--	--	--	--	330	--	383	51	127	--	223
ND2225-1R	234	148	251	103	236	290	320	55	140	389	217
ND2417-6	374	299	400	215	414	380	420	105	232	436	327
ND2471-8	343	262	316	120	264	358	364	81	205	379	269
P84-13-12	--	--	--	--	184	330	334	49	185	350	239
W1149	320	288	--	71	443	267	383	80	113	401	263
W1189	207	223	--	103	290	237	443	66	161	449	242
W1242	241	239	--	65	408	306	455	52	160	449	264
Average	329	249	330	105	316	328	390	74	170	425	

North Central Regional Trial Table 3. Average Percent U.S. No. 1 (over 2" Diam.) - 1995

Cultivar or Selection	Alb	Man	Ont	IA	MI	MN	NE	ND	OH	WI	Ave.
Atlantic	87	86	85	74	88	94	95	82	71	93	85
Dark Red Norland	80	79	92	50	79	92	95	82	82	88	82
Norchip	64	66	86	66	74	91	95	68	87	87	78
Red Pontiac	87	91	83	66	83	93	92	79	80	96	85
Snowden	69	75	88	76	86	94	96	82	75	95	84
Minn. 15620	72	77	80	25	66	84	96	71	47	84	70
Minn. 16191	69	58	84	59	82	95	94	83	68	90	78
Minn. 16201	94	86	83	50	85	94	91	69	71	91	81
MSA091-1	--	--	--	--	83	93	94	52	66	89	79
MSB007-1	--	--	--	--	77	92	97	75	67	86	81
MSB076-2	--	--	--	--	77	--	96	36	64	--	68
ND2225-1R	60	60	75	45	64	87	97	81	74	87	73
ND2417-6	76	78	84	75	81	86	95	78	73	87	81
ND2471-8	81	78	86	55	73	92	93	86	72	92	81
P84-13-12	--	--	--	--	66	94	97	77	78	95	84
W1149	84	85	--	47	91	94	94	60	70	90	79
W1189	72	78	--	50	83	89	96	68	71	95	78
W1242	70	80	--	47	90	93	97	58	71	90	77
Average	76	77	84	53	79	92	95	72	71	90	

North Central Regional Trial Table 4. Maturity Classification^{1/} - 1995

Cultivar or Selection	Man	Ont	IA	MI	OH	Average
Atlantic	2.8	3.3	--	4.0	2.0	3.0
Dark Red Norland	1.0	2.1	1.0	1.0	1.0	1.2
Norchip	2.5	3.0	2.0	2.0	2.0	2.3
Red Pontiac	2.8	4.3	3.0	5.0	2.5	3.5
Snowden	3.0	3.6	--	4.0	2.5	3.3
Minn. 15620	3.8	4.1	--	4.5	2.5	3.7
Minn. 16191	3.5	4.1	--	4.0	3.0	3.7
Minn. 16201	2.0	3.1	--	4.0	2.3	2.9
MSA091-1	--	--	--	3.5	2.3	2.9
MSB007-1	--	--	--	3.5	3.0	3.3
MSB076-2	--	--	--	4.0	1.5	2.8
ND2225-IR	1.5	3.1	--	2.5	1.8	2.2
ND2417-6	2.5	3.3	3.0	4.0	2.5	3.1
ND2471-8	1.0	3.0	2.0	3.0	1.3	2.1
P84-13-12	--	--	--	3.0	3.0	3.0
W1149	4.0	--	4.0	4.0	4.5	4.1
W1189	3.5	--	--	4.0	4.5	4.0
W1242	3.0	--	--	4.0	2.0	3.0
Average	2.6	3.4	1.0	3.6	2.5	

- ^{1/} 1. Very Early - Irish Cobbler Maturity
 2. Early - Norland Maturity
 3. Medium - Red Pontiac Maturity
 4. Late - Katahdin Maturity
 5. Very late - Russet Burbank Maturity

North Central Regional Trial Table 5. Percent Total Solids - 1995

Cultivar or Selection	Alb	Man	Ont	IA	MI	MN	NE	ND	OH	WI	Ave.
Atlantic	25.0	23.1	22.5	19.4	18.6	19.9	18.0	22.0	23.4	18.0	21.0
Dark Red Norland	18.5	17.4	16.4	14.4	13.5	14.3	15.4	17.5	16.0	13.1	15.7
Norchip	21.4	19.4	20.0	18.0	16.5	18.6	17.5	22.0	19.7	16.7	19.0
Red Pontiac	19.0	19.0	16.4	14.4	14.1	15.2	15.4	18.0	16.0	14.1	16.2
Snowden	25.8	22.0	21.9	17.8	17.7	19.2	18.2	22.9	21.9	17.3	20.5
Minn. 15620	23.3	20.8	19.6	15.1	16.2	18.4	17.5	21.2	16.2	16.9	18.5
Minn. 16191	22.8	21.8	21.9	17.2	18.0	18.8	17.5	21.8	22.1	18.8	20.1
Minn. 16201	20.5	18.8	15.8	14.3	13.9	15.4	16.5	18.4	16.0	14.1	16.4
MSA091-1	--	--	--	--	18.2	19.9	21.2	21.2	23.0	19.4	20.5
MSB007-1	--	--	--	--	15.8	18.8	15.4	20.1	21.5	16.2	18.0
MSB076-2	--	--	--	--	18.8	--	20.7	22.4	21.5	--	20.9
ND2225-1R	18.8	16.7	16.0	14.9	13.7	15.0	15.4	16.7	17.5	13.7	15.8
ND2417-6	22.8	19.4	19.2	16.2	16.0	17.3	17.5	20.7	20.6	16.0	18.6
ND2471-8	22.8	22.7	21.1	16.9	17.7	18.2	16.5	23.5	21.9	16.9	19.8
P84-13-12	--	--	--	--	17.3	18.2	20.3	22.4	22.1	16.2	19.4
W1149	23.5	22.6	--	17.2	18.2	19.7	20.7	23.3	18.3	18.6	20.2
W1189	22.0	21.9	--	18.9	17.3	19.0	17.3	22.0	20.6	17.5	19.6
W1242	22.0	21.7	--	18.1	18.0	19.0	20.3	21.8	21.9	16.9	20.0
Average	22.0	20.5	19.2	15.1	16.6	17.9	17.9	21.0	20.0	16.5	

North Central Regional Trial Table 6. Scab Reaction Report. Most Representative Scab
(Area/type)¹ - 1995

Cultivar or Selection	Alb	Man	Ont	IA	MI	MN	NE	ND	OH	WI
Atlantic	0	0-0	T-1	0-0	T-3	3-3.5	--	T-1	T-1.25	T-1
Dark Red Norland	0	0-0	1-1	0-0	0-0	1-5	--	T-1	0	1-1
Norchip	0	T-1	T-1	0-0	1-1	2.7-1.8	--	T-1	0	T-1
Red Pontiac	0	T-1	T-1	T-1	1-5	1-4	--	T-1	0	1-1
Snowden	0	T-1	T-1	0-0	T-5	3-4.3	--	T-1	0	T-1
Minn. 15620	0	T-1	T-1	0-0	1-5	0-0	--	T-1	0	1-1
Minn. 16191	0	T-1	T-1	0-0	T-5	1.5-3.8	--	T-1	3-2.5	0-0
Minn. 16201	0	0-0	1-1	0-0	1-2	3-5	--	T-1	0	T-1
MSA091-1	0	--	--	--	0-0	1-5	--	T-1	0	T-1
MSB007-1	0	--	--	--	1-5	3-5	--	T-1	0	T-1
MSB076-2	0	--	--	--	T-2	--	--	T-1	0	--
ND2225-1R	0	T-1	3-1	0-0	1-5	2-2	--	T-1	0	T-1
ND2417-6	0	1-1	2-1	0-0	T-5	1-5	--	T-1	0	T-1
ND2471-8	0	T-1	1-1	0-0	1-5	2-3.5	--	T-1	0	T-1
P84-13-12	0	--	--	--	0-0	3-3.7	--	T-1	0	1-1
W1149	0	T-1	--	T-2	T-3	1.5-4	--	T-1	T-12.5	T-1
W1189	0	1-1	--	1-3	T-5	2-5	--	T-1	T-23.75	0-0
W1242	0	0	--	0-0	T-3	1-3	--	T-1	0	T-1

^{1/} Area

Type

T = less than 1 %
1 = 1-20 %
2 = 21-40 %
3 = 41-60 %
4 = 61-80 %
5 = 80-100 %

1 = Small, superficial
2 = Larger, superficial
3 = Larger, rough pustules
4 = Larger pustules, shallow eyes
5 = Very large pustules, deep holes

North Central Regional Trial Table 7. Summary of Grade Defects - 1995.

Cultivar or Selection	Scab ^{2/}	External ^{1/}					Internal ^{1/}			
		Growth Cracks	Off Shape & Second Growth	Tuber Rot	Sun Green	Total Free of External Defects ^{3/}	Hollow Heart	Internal Necrosis	Vascular Discoloration	Total Free of Internal Defects ^{4/}
Atlantic	2.2	1.7	1.3	1.0	3.5	92.6	12.5	6.7	2.1	80.5
Dark Red Norland	0.8	3.8	1.4	0.3	1.5	93.1	1.3	0.2	1.8	96.5
Norchip	11.0	1.8	10.2	1.3	6.6	80.6	1.2	0.9	3.3	94.6
Red Pontiac	4.5	1.0	6.1	1.2	1.7	90.3	3.8	0.4	4.1	91.8
Snowden	5.8	1.2	2.5	4.0	3.1	88.3	6.5	2.5	2.7	68.6
Minn. 15620	6.8	0.1	7.7	0.8	3.3	90.7	0.5	0.6	6.3	92.6
Minn. 16191	5.8	0.2	5.3	3.6	4.5	86.6	0.7	18.1	2.9	78.3
Minn. 16201	2.8	2.5	2.9	0.4	3.0	91.2	0.6	1.0	3.9	94.6
MSA091-1	0.3	3.3	11.1	0.0	1.3	84.3	2.7	3.5	0.7	93.2
MSB007-1	16.0	0.7	4.0	1.2	1.9	92.7	1.2	0.2	0.0	98.7
MSB076-2	1.0	1.4	7.0	0.0	2.2	89.4	1.0	0.0	0.0	99.0
ND2225-1R	14.0	0.4	1.8	2.3	1.2	94.4	0.2	1.5	7.0	91.4
ND2417-6	4.8	0.4	2.7	1.7	6.0	89.9	0.0	2.5	0.7	96.8
ND2471-8	11.3	1.1	1.6	2.2	3.0	92.4	5.8	0.0	1.5	93.1
P84-13-12	7.3	2.7	2.9	0.0	1.2	93.2	0.0	0.0	0.4	99.6
W1149	8.5	0.8	7.8	0.8	1.9	88.9	6.4	0.5	9.0	84.0
W1189	7.5	2.2	5.4	1.8	1.7	88.8	1.5	8.2	2.6	87.9
W1242	1.8	1.5	3.6	1.4	4.7	89.0	15.4	0.0	1.2	83.4
Average	6.2	1.5	4.7	1.3	2.9	89.8	3.4	2.6	2.8	

^{1/} Based on four 25 tuber samples (one from each replication). Percentage based on number of tubers. Do not count scab in external defects.

^{2/} Number of tubers with scab of 100 tubers rated. Do not count in external defects.

^{3/} Tubers free from any external defect of any sort.

^{4/} Percentage normal tubers are those showing no internal defects. Some individual tubers will have more than one type of internal defect.

North Central Regional Trial Table 8. Chip Color - 1995

Cultivar or Selection	Agtron ^{1/}						PCII Color Chart ^{2/}			
	Alb	Man	Ont	NE	ND	Ave.	MI	OH	WI	Ave.
Atlantic	49	41	62	56	30	48	2.5	1.0	4.3	2.6
Dark Red Norland	30	32	47	36	21	33	4.0	2.0	6.6	4.2
Norchip	38	46	51	57	33	45	1.5	1.5	4.6	2.5
Red Pontiac	19	17	23	28	13	20	4.5	3.0	7.3	4.9
Snowden	52	48	61	60	30	50	1.0	1.5	4.1	2.2
Minn. 15620	53	49	57	59	32	50	2.0	1.5	4.0	2.5
Minn. 16191	41	41	50	35	27	39	3.5	2.0	6.3	3.9
Minn. 16201	33	30	41	28	25	31	2.0	3.0	7.3	4.1
MSA091-1	--	--	--	51	28	40	1.5	1.0	3.5	2.0
MSB007-1	--	--	--	31	23	27	3.0	1.0	6.1	3.4
MSB076-2	--	--	--	61	36	49	1.5	1.0	--	1.3
ND2225-1R	19	20	39	29	11	24	4.0	2.0	8.5	4.8
ND2417-6	47	51	60	55	37	50	1.5	1.0	4.6	2.4
ND2471-8	47	51	52	54	30	47	3.5	1.0	4.1	2.9
P84-13-12	--	--	--	60	34	47	1.5	1.0	3.2	1.9
W1149	46	49	--	47	31	43	2.0	1.0	3.8	2.3
W1189	50	55	--	51	33	47	2.0	1.5	3.0	2.2
W1242	56	52	--	61	32	40	1.5	1.0	3.3	1.9

^{1/} Agtron (Highest number lightest)^{2/} PCII Color Chart (1 = lightest; 10 = darkest)

North Central Regional Trial Table 9. General Merit Rating Points - 1995^{1/}

Cultivar or Selection	Alb	Man	Ont	IA	MI ^{2/}	MN	NE	ND	OH ^{2/}	WI	Total Points
Atlantic	5	5	3					3		3	19
Dark Red Norland	2			1		3					6
Norchip				4							4
Red Pontiac		1				2					3
Snowden			5			4	3	2		4	18
Minn. 15620			1			1					2
Minn. 16191								5			5
Minn. 16201	1			3						1	4
MSA091-1					2						3
MSB007-1							2				2
MSB076-2					4		4				8
ND2225-1R	3				3				3	5	14
ND2417-6		3	4	5	5	5		4	5	2	33
ND2471-8	4	4	2	2				1	4		17
P84-13-12							1		2		3
W1149											0
W1189											0
W1242		2					5				7

^{1/} Merit Ratings	Rating	Points
1. ND2417-6 - 33 points	1	5
2. Atlantic - 19 points	2	4
3. Snowden - 18 points	3	3
4. ND2471-8 - 17 points	4	2
5. ND2225-1R - 14 points	5	1

^{2/} No 5th place rating

WESTERN REGIONAL POTATO VARIETY TRIAL

J. J. Pavek, D. L. Corsini, and Cooperators

Uniform Potato Yield Trial

The 1995 trial was grown at eleven locations for yield; disease data are from two of the locations. Twenty-two entries, 18 experimental, two standard checks, and two early checks, were grown. Three locations grew entries for both early and late harvest. The trial locations, dates of planting, vine killing, and harvest, and

days from planting to vine-kill/harvest are shown below. Cultural practices and the use of fertilizer, herbicides, pesticides, and vine killing varied according to local conditions. Trial plots at all locations were irrigated on a regular schedule throughout the entire growing season according to plant needs. The growing season began cool and wet and finished near normal across the region.

Pavek, Breeder, and Corsini, Pathologist, USDA-ARS, Univ. of Idaho, PO Box AA, Aberdeen, ID 83210. Cooperators: California, R. Voss, K. Brittan; Colorado, D. Holm; Idaho, S. Love; New Mexico, A. Carter, E.J. Gregory; Oregon, A. Mosley, D. Hane, K. Rykbost, C. Stanger, S. James; Texas, D. Smallwood, J. C. Miller, Jr.; Washington, R. Thornton, L. Mikitzel, C. Brown.

Data on vines, tubers, yield, internal quality, disease reactions, merit scores, and disposition are presented in Western Tables 1 through 7. Six clones finished three years of testing; of these, A8495-1 is going on to plant scale trials, AC83064-1 and AC83064-6 will be in fresh market trials; five clones were dropped, and seven continue in this trial in 1996.

State	Location	Planting Date	Vine-Kill Date	Harvest Date	Days to Vine-Kill/ Harvest
California	Kern Co.	2/21	6/5	6/19	104/118
"	Tulelake	5/17	9/5	9/25	111/131
Colorado	San Luis Valley	5/20	9/8	9/27	111/130
Idaho	Aberdeen	4/26	9/7	9/20	134/147
"	Kimberly-Early	4/25	8/18	8/21	115/118
"	Kimberly-Late	4/25	---	10/9	---/167
New Mexico	Farmington	4/25	---	10/16	---/174
Oregon	Hermiston-Early	3/22	7/21	8/4	121/135
"	Hermiston-Late	4/13	9/16	9/25	156/165
"	Klamath Falls	6/12	9/21	10/4	101/114
"	Malheur	4/25	9/22	9/27	150/155
Texas	Springlake	4/1	8/6	8/20	127/141
Washington	Othello-Early	4/12	7/29	8/7	108/117
"	Othello-Late	4/17	9/12	9/25	148/161

Western Table 1. 1995 Seed source, stand, tuber and vine characteristics, and foliar and tuber diseases at Aberdeen, ID ^{1/}

Entry	Year in	Seed Source	Stand (8 loc) %	TUBER		VINE		Vert. Wilt	Early Blight	Common Scab	Net		
				Shape	Skin	Size	Mat				Necrosis		Erwinia Soft Rot
											Hrm	Ab	
RUSSET BURBANK	ck	OR	95	L	RUS	ML	ML	MS	S	R	MS	S	MR
RANGER RUSSET	ck	OR	97	L	RUS	M	ML	R	MS	MR	MS	MR	MS
A81386-1	3	OR	96	L	RUS	ML	ML	MR	MS	R	MR	MR	S
A82360-7	1	ID	96	O	RUS	L	L	VR	MR	R	R	MR	-
A84118-3	2	OR	93	L	RUS	ML	L	VR	MR	VR	MS	MR	MS
A84180-8	3	OR	94	L	RUS	M	M	MR	S	VR	MR	MS	MS
A8495-1	3	OR	95	L	RUS	M	M	R	S	MR	MR	MR	MS
AC83064-1	3	OR	90	O	RUS	M	ML	R	MS	R	R	R	S
AC83064-6	3	OR	93	L	RUS	ML	ML	R	S	MR	MR	R	MS
AC84487-1	2	OR	95	L	RUS	MS	E	R	S	MR	R	MR	S
AO85165-1	2	OR	93	O	WHT	M	L	R	MS	VR	MS	S	MS
ATX84706-2Ru	2	OR	94	O	RUS	ML	ME	MR	S	MR	R	R	VS
CO84074-2	2	OR	86	O	RUS	M	ME	R	S	VR	MR	R	S
CO85026-4	1	CO	95	L	WHT	M	ML	VR	S	VR	R	-	MR
TX1229-2Ru	2	OR	92	O	RUS	M	ME	R	S	R	R	MR	VS
TXAV657-27Ru	1	CO	94	O	RUS	M	ML	MR	S	MR	MR	-	S
A83115-12	3	OR	97	L	RUS	M	L	R	S	VR	R	MR	S
A84420-5	1	OR	97	L	TAN	MS	ML	R	S	R	MR	R	MS
AO80432-1	2	OR	88	O	RUS	ML	ML	VR	MS	VS	MR	R	S
RUSSET NORKOTAH	ck	OR	94	L	RUS	S	E	S	VS	VR	-	MS	S
SHEPODY	ck	OR	95	L	WHT	M	M	MR	S	S	MS	MS	S
W1099	1	WA	95	O	RUS	ML	ME	MR	S	MR	-	MR	MR

^{1/} Shape: L = long, O = oblong, R = round; Vine size: L = large, ML = medium-large; M = medium, MS = medium-small, S = small; Mat = maturity; L = late, ML = medium-late, M = medium, ME = medium-early, E = early; Disease reaction: R = resistant, VR = very resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible.

Entry	Early Harvest							Late Harvest										
	Calif		Idaho	Oregon	Texas	Wash		Calif		Colo	Idaho		NMex		Oregon		Wash	
	Krn					Mean	Oth	Spr	Hrm		Tul	Slv	Ab	Kim	Frm	Hrm	Kim	Mal
RUSSET BURBANK	-		321	-	359	338	339	436	399	449	399	380	616	314	557	516	454	
RANGER RUSSET	324		318	-	389	266	324	663	405	465	451	353	649	470	548	509	481	
A81386-1	328		286	544	455	352	393	512	400	477	404	340	684	447	567	570	486	
A82360-7	396		307	635	284	258	376	727	459	541	555	-	1009	413	723	736	634	
A84118-3	222		263	454	413	272	325	526	344	472	454	384	660	353	380	665	464	
A84180-8	251		314	568	350	389	374	670	366	523	454	521	658	476	513	547	507	
A8495-1	253		295	518	419	259	349	514	349	525	429	291	638	420	335	439	428	
AC83064-1	315		350	679	405	417	433	557	361	565	531	539	748	296	494	759	537	
AC83064-6	312		334	405	337	281	334	512	329	425	430	240	693	328	599	551	449	
AC84487-1	252		256	568	295	381	350	468	253	336	293	272	541	399	394	482	371	
AO85165-1	265		283	636	378	383	389	821	436	624	557	394	716	471	516	667	548	
ATX84706-2Ru	431		294	663	480	325	439	554	331	469	405	278	617	477	537	560	459	
CO84074-2	315		312	515	469	232	369	453	355	468	452	362	628	359	484	660	471	
CO85026-4	300		197	455	342	279	315	513	295	351	354	304	798	457	520	757	480	
TX1229-2Ru	349		280	571	470	327	399	581	344	476	388	323	625	429	433	659	460	
TXAV657-27Ru	525		331	-	431	342	407	610	416	448	493	446	1064	441	564	682	569	
A83115-12	-		-	-	-	-	-	731	403	545	542	547	940	383	674	663	587	
A84420-5	356		-	-	-	-	356	347	359	461	417	266	710	393	582	540	466	
AO80432-1	-		-	447	-	-	447	438	239	388	425	403	695	359	458	646	452	
RUSSET NORKOTAH	232		256	542	298	360	337	-	289	-	-	-	-	373	-	-	331	
SHEPODY	-		300	580	343	373	399	-	357	-	-	-	726	-	-	-	542	
W1099	402		306	539	231	328	361	505	272	-	-	-	-	378	-	-	325	
Location means	324		295	548	376	324	369	557	353	474	444	369	721	402	520	611	477	

^{1/} Krn = Kern. Co., Kim = Kimberly, Hrm = Hermiston, Spr = Springfield, Oth = Othello, Tul = Tulelake, Slv = San Luis Valley, Ab = Aberdeen, Frm = Farmington, Mal = Malheur County.

Western Table 3. 1995 U.S. No. 1's, percent of total yield for locations; overall mean, percent and cwt/acre; early and late harvest.

Entry	Early Harvest							Late Harvest													
	Calif			Idaho	Oregon	Texas	Wash	Mean		Calif		Colo	Idaho		NMex	Oregon		Wash		Mean	
	Krn	Kim	Hrm					Spr	Oth	%	cwt/A		Tul	Slv		Ab	Kim	Frm	Hrm	Klm	Mal
RUSSET BURBANK	-	56	-	58	58	58	195	58	87	74	60	66	80	69	61	75	63	71	320		
RANGER RUSSET	70	79	-	76	69	73	240	73	92	88	82	75	92	88	82	82	74	84	422		
A81386-1	87	81	84	74	70	78	312	78	93	78	84	83	89	92	75	88	73	84	412		
A82360-7	88	71	71	50	66	69	266	69	88	79	77	79	-	87	88	87	80	83	540		
A84118-3	53	73	72	65	48	60	207	60	91	80	84	88	92	88	80	73	85	85	401		
A84180-8	72	79	87	85	78	80	304	80	77	82	85	83	92	91	80	81	81	84	440		
A8495-1	65	79	79	73	71	73	259	73	93	70	84	89	87	86	88	79	81	84	371		
AC83064-1	87	83	84	70	77	80	348	80	96	91	88	88	94	91	85	85	82	89	479		
AC83064-6	87	81	81	61	82	79	261	79	95	91	86	85	87	93	91	92	84	89	408		
AC84487-1	82	78	80	64	69	74	263	74	82	83	74	75	86	78	85	83	70	79	302		
AO85165-1	79	80	87	68	73	77	305	77	98	90	86	89	96	94	90	89	81	90	522		
ATX84706-2Ru	97	84	98	92	86	91	407	91	95	88	82	88	96	87	86	87	89	89	416		
CO84074-2	87	84	91	74	77	82	307	82	88	84	85	87	94	94	87	89	80	88	410		
CO85026-4	76	70	74	70	68	71	227	71	92	87	85	86	89	93	90	90	75	88	422		
TX1229-2Ru	94	87	96	87	84	89	360	89	96	90	90	87	94	86	84	81	76	87	410		
TXAV657-27Ru	85	73	-	64	73	73	302	73	86	84	71	81	93	91	83	90	89	85	495		
A83115-12	-	-	-	-	-	-	-	-	88	87	84	82	93	93	77	88	79	86	521		
A84420-5	77	-	-	-	-	77	273	77	80	84	76	74	85	83	66	83	71	78	353		
AO80432-1	-	-	76	-	-	76	338	76	93	80	78	88	87	95	87	82	88	86	394		
RUSSET NORKOTAH	82	73	78	74	78	77	261	77	-	89	-	-	-	-	85	-	-	87	286		
SHEPODY	-	76	83	74	74	76	311	76	-	86	-	-	-	93	-	-	-	90	492		
W1099	86	66	79	63	53	67	258	67	92	81	-	-	-	-	86	-	-	86	337		
Location means	81	76	82	71	71	75	286	75	90	84	81	83	90	89	83	84	79	85	416		

Western Table 4. 1995 U.S. No.1's over 12 oz, percent of total yield for locations; percent and cwt/acre for means; early and late harvest.

Entry	Early Harvest							Late Harvest									
	Calif	Idaho	Oregon	Texas	Wash	Mean		Calif	Colo	Idaho	NMex	Oregon	Wash				
	Krn	Kim	Hrm	Spr	Oth	%	cwt/A	Tul	Slv	Ab	Frm	Klm	Mal	Oth	%	cwt/A	
RUSSET BURBANK	-	1	-	1	2	1	3	7	19	2	6	3	22	25	12	56	
RANGER RUSSET	2	8	-	12	12	9	28	28	44	34	10	39	43	44	32	164	
A81386-1	3	13	7	4	4	6	24	28	35	30	5	28	37	35	27	136	
A82360-7	9	2	1	1	6	4	14	21	17	17	-	29	46	35	23	168	
A84118-3	3	3	1	5	2	3	8	14	16	25	12	14	10	29	16	81	
A84180-8	3	8	18	21	5	11	47	24	19	27	9	27	29	45	25	141	
A8495-1	3	7	4	3	0	4	13	17	3	18	2	23	14	26	15	75	
AC83064-1	8	11	8	11	7	9	38	48	38	38	29	42	42	42	37	207	
AC83064-6	11	12	15	3	19	12	40	42	44	36	41	57	57	58	42	210	
AC84487-1	7	7	11	4	9	8	30	26	29	10	5	14	27	25	19	71	
AO85165-1	3	8	17	10	6	9	40	42	37	27	35	47	51	50	40	235	
ATX84706-2Ru	14	34	65	55	49	43	202	56	32	47	64	57	67	76	51	259	
CO84074-2	3	27	19	5	16	14	51	22	21	33	39	34	47	53	34	170	
CO85026-4	1	2	4	6	5	3	12	34	35	17	22	53	49	53	32	180	
TX1229-2Ru	14	30	61	24	47	35	150	53	39	51	44	63	61	65	50	255	
TXAV657-27Ru	5	2	-	6	2	4	16	42	28	7	14	45	45	40	27	182	
A83115-12	-	-	-	-	-	-	-	55	25	35	12	55	58	51	36	249	
A84420-5	2	-	-	-	-	2	6	11	24	15	2	11	18	21	13	60	
AO80432-1	-	-	5	-	-	5	22	29	15	15	2	29	28	36	20	101	
RUSSET NORKOTAH	5	7	4	10	21	9	31	-	45	-	-	-	-	-	36	102	
SHEPODY	-	13	40	10	35	24	108	-	31	-	-	70	-	-	44	308	
W1099	2	2	6	5	8	5	17	24	21	-	-	-	-	-	18	70	
Location means	5	10	17	10	13	10	43	31	28	26	20	37	40	43	30	158	

^{1/} U.S. No. 1's over 3".

Western Table 5. 1995 Specific gravity of tubers; early and late harvest .

Entry	Early Harvest							Late Harvest							
	Calif	Idaho	Oregon	Texas	Wash	Calif	Colo	Idaho		NMex	Oregon		Wash		
	Krn	Kim	Hrm	Spr	Oth	Tul	Slv	Ab	Kim	Frm	Hrm	Klm	Mal	Oth	Mean
RUSSET BURBANK	-	1.075	-	1.073	1.074	1.089	1.086	1.080	1.076	1.089	1.082	1.084	1.085	1.076	1.083
RANGER RUSSET	1.087	1.081	-	1.084	1.071	1.087	1.084	1.088	1.091	1.094	1.083	1.085	1.099	1.071	1.087
A81386-1	1.080	1.074	1.079	1.067	1.066	1.082	1.078	1.081	1.078	1.090	1.076	1.076	1.088	1.063	1.079
A82360-7	1.105	1.078	1.093	1.080	1.067	1.089	1.095	1.092	1.096	-	1.086	1.093	1.095	1.070	1.089
A84118-3	1.091	1.082	1.095	1.079	1.076	1.096	1.089	1.091	1.095	1.101	1.093	1.083	1.106	1.086	1.093
A84180-8	1.094	1.077	1.077	1.074	1.070	1.083	1.084	1.083	1.081	1.091	1.074	1.074	1.083	1.068	1.080
A8495-1	1.099	1.088	1.080	1.082	1.074	1.085	1.088	1.098	1.091	1.098	1.083	1.082	1.097	1.073	1.089
AC83064-1	1.073	1.069	1.080	1.061	1.059	1.068	1.081	1.073	1.079	1.085	1.072	1.072	1.080	1.068	1.076
AC83064-6	1.087	1.076	1.075	1.082	1.063	1.077	1.081	1.076	1.081	1.081	1.074	1.075	1.085	1.069	1.077
AC84487-1	1.089	1.074	1.067	1.068	1.061	1.087	1.068	1.071	1.073	1.083	1.066	1.074	1.066	1.062	1.072
AO85165-1	1.090	1.072	1.077	1.059	1.060	1.072	1.081	1.078	1.080	1.082	1.074	1.081	1.079	1.064	1.077
ATX84706-2Ru	1.092	1.078	1.077	1.062	1.068	1.075	1.088	1.080	1.078	1.086	1.078	1.077	1.080	1.069	1.079
CO84074-2	1.086	1.070	1.069	1.068	1.060	1.071	1.080	1.072	1.072	1.088	1.070	1.069	1.077	1.065	1.074
CO85026-4	1.094	1.079	1.084	1.080	1.071	1.082	1.085	1.083	1.088	1.097	1.079	1.085	1.097	1.071	1.086
TX1229-2Ru	1.091	1.081	1.074	1.072	1.065	1.077	1.086	1.081	1.079	1.088	1.075	1.079	1.078	1.071	1.080
TXAV657-27Ru	1.091	1.084	-	1.078	1.067	1.080	1.079	1.084	1.086	1.095	1.078	1.082	1.082	1.073	1.082
A83115-12	-	-	-	-	-	-	1.078	1.078	1.079	1.082	1.073	1.075	1.088	1.060	1.078
A84420-5	1.095	-	-	-	-	1.095	1.105	1.107	1.116	1.107	1.104	1.106	1.121	1.091	1.107
AO80432-1	-	-	1.090	-	-	1.090	1.096	1.086	1.096	1.092	1.087	1.089	1.097	1.084	1.091
RUSSET NORKOTAH	1.090	1.074	1.068	1.057	1.067	1.071	-	1.078	-	-	-	1.073	-	-	1.076
SHEPODY	-	1.078	1.078	1.077	1.062	1.074	-	1.082	-	-	1.076	-	-	-	1.079
W1099	1.086	1.074	1.069	1.074	1.062	1.073	1.075	1.072	-	-	-	1.077	-	-	1.075
Location Means	1.090	1.077	1.078	1.072	1.066	1.078	1.085	1.083	1.085	1.091	1.079	1.081	1.089	1.071	1.082

Western Table 6. 1995 External and internal defects, french fry color, sugar ends, dextrose, vitamin C, and glycoalkaloids.

(U.S. No.2)

Entry	& Culls > 4 oz % ^{1/}	Culls < 4 oz %	Growth Cracks (9 loc) ^{2/}	Shatter Bruise (7 loc) ^{2/}	Hollow Heart % ^{3/}	Black- Spot (6 loc) ^{4/}	French Fry Color ^{5/}	Sugar Ends % ^{6/}	Dextrose YSI % DWB ^{7/}	Vit. C Mg/100g FWB ^{7/}	Glyco- alkaloids mg/100g FWB ^{7/}
RUSSET BURBANK	8.6	21.8	4.6	4.3	7	3.6	1.8	11	0.09	17.5	10.1
RANGER RUSSET	10.3	7.0	4.3	4.5	1	3.3	1.8	7	0.11	28.6	6.0
A81386-1	6.2	10.7	4.9	4.7	2	3.3	0.6	4	0.08	26.3	4.7
A82360-7	6.1	10.7	4.7	4.6	3	3.9	0.9	6	0.07	21.7	5.3
A84118-3	3.4	12.5	4.6	4.4	4	4.6	1.1	4	0.07	17.2	8.0
A84180-8	9.8	7.7	4.1	3.8	5	4.3	2.7	10	0.18	25.6	9.4
A8495-1	3.1	12.9	4.9	4.3	3	3.1	1.1	11	0.04	25.1	2.7
AC83064-1	5.6	6.1	4.8	4.7	1	4.6	2.3	22	0.21	22.0	1.1
AC83064-6	4.8	6.4	4.8	4.6	10	3.8	1.1	9	0.07	25.6	3.0
AC84487-1	7.0	14.3	4.3	4.0	2	3.8	1.4	17	0.06	21.5	4.5
AO85165-1	4.4	5.7	4.8	4.4	4	3.8	2.2	20	0.21	17.7	2.3
ATX84706-2Ru	8.5	3.8	3.7	3.7	12	3.0	1.4	10	0.07	20.2	11.8
CO84074-2	5.3	7.8	4.7	3.9	9	4.0	3.3	14	0.28	21.6	1.0
CO85026-4	5.9	7.1	4.7	3.7	0	4.0	2.7	26	0.17	19.8	1.5
TX1229-2Ru	10.4	3.7	3.8	3.5	11	3.2	1.1	10	0.07	22.5	10.6
TXAV657-27Ru	4.6	10.4	4.5	4.0	2	3.6	1.6	16	0.08	17.7	5.5
A83115-12	8.5	7.0	4.2	3.0	1	3.5	2.6	2	0.25	21.4	6.6
A84420-5	4.9	17.6	4.2	4.3	1	3.6	0.4	6	0.07	17.6	12.3
AO80432-1	2.4	11.3	4.9	4.0	7	3.2	1.1	6	0.10	22.8	4.1
RUSSET NORKOTAH	4.8	9.0	4.9	5.0	9	4.8	2.0	14	---	---	---
SHEPODY	3.8	6.7	4.8	5.0	3	5.0	3.0	28	---	---	---
W1099	4.1	9.8	4.1	5.0	0	4.9	1.5	3	---	---	---
Means	6.0	9.5	4.5	4.2	4	3.9	1.7	12	0.12	21.7	5.8

^{1/} Firm omitted. Late Harvest, eight locations.^{2/} 5.0 (none) to 1.0 (severe), includes Early Harvest.^{3/} Mean of 9 locations including Early Harvest, > 12 oz. tubers; includes brown center.^{4/} Mean of 6 locations, (2 loc. for Shepody), 1.0 (darkest) to 5.0 (lightest).^{5/} Mean of 5 locations (Slv, Ab, Hrm, Kim, Klm), out of 45 F storage, < 1.0 (lightest) to 4.0 (darkest).^{6/} Mean of 5 locations (Ab, Kim, Hrm, Klm, Mal).^{7/} Aberdeen tubers only, sampled late October; DWB = dry weight basis; FWB = fresh weight basis.

Western Table 7. 1995 Merit scores, processing and fresh market, and disposition.

Entry	Merit Score: Processing				Merit Scores: Fresh Market					Disposition	
	Idaho			Mean	Calif	Texas					
	SLV	2/	Hrm			SLV	2/	Hrm	Spr		
RUSSET BURBANK	3.0	2.5	4.0	3.2	3.3	3.0	2.7	3.0	2.0	2.8	CHECK
RANGER RUSSET	1.0	4.0	5.0	3.3	2.2	5.0	2.9	4.0	2.8	3.6	CHECK
A81386-1	5.0	3.3	4.0	4.1	3.4	4.0	3.8	3.0	3.5	3.5	RTC
A82360-7	5.0	3.3	3.5	3.9	2.0	5.0	2.2	1.5	1.8	2.5	CONT
A84118-3	2.0	4.2	4.0	3.4	3.1	2.0	4.2	3.5	3.0	3.2	CONT
A84180-8	1.0	2.8	4.5	3.9	2.5	3.0	3.8	5.0	3.5	3.6	RTC
A8495-1	2.0	4.7	4.5	3.7	3.2	2.0	4.6	4.5	3.0	3.5	RTC
AC83064-1	1.0	1.8	2.5	1.8	2.8	4.0	3.6	4.0	3.0	3.5	RTC
AC83064-6	4.0	3.5	3.0	3.5	3.5	3.0	3.8	3.5	2.8	3.3	RTC
AC84487-1	2.0	3.0	1.5	2.2	3.1	1.0	3.4	4.0	2.5	2.8	DROP
AO85165-1	5.0	2.3	3.5	3.6	3.2	5.0	3.6	3.0	2.8	3.5	CONT
ATX84706-2Ru	1.0	2.5	1.5	1.7	2.9	2.0	1.5	1.0	3.8	2.2	CONT
CO84074-2	1.0	1.0	1.5	1.2	3.7	3.0	3.1	1.0	3.5	2.9	DROP
CO85026-4	1.0	2.8	2.5	2.1	3.1	2.0	3.8	2.5	2.8	2.8	CONT
TX1229-2Ru	4.0	2.5	1.0	2.5	2.6	3.0	1.7	1.0	3.8	2.4	CONT
TXAV657-27Ru	1.0	3.3	3.0	2.4	2.6	5.0	3.0	2.0	3.0	3.1	CONT
A83115-12	1.0	2.2	3.0	2.9	2.5	5.0	3.7	1.0	-	3.1	RTC
A84420-5	4.0	3.5	3.0	3.5	2.7	3.0	2.8	1.0	-	2.4	DROP
AO80432-1	1.0	4.0	3.5	2.8	3.3	1.0	3.4	3.5	-	2.8	DROP
RUSSET NORKOTAH	2.0	1.5	1.0	1.5	3.3	2.0	4.0	4.0	3.5	3.4	CHECK
SHEPODY	1.0	3.5	2.0	2.2	--	3.0	1.5	1.0	3.0	2.1	CHECK
W1099	1.0	2.5	1.0	1.5	3.9	1.0	3.0	2.0	3.5	2.7	DROP
Means	2.2	2.9	2.9	2.7	3.0	3.0	3.2	2.7	3.0	3.0	

^{1/} 1.0 (poorest) to 5.0 (best).

^{2/} Composite scores for Ab & Kim, for Hrm and Krn & Tul early and late trials.

^{3/} RTC = regional testing completed (3 yrs), CONT = continue in trial, DROP = drop from trial, CHECK = control.

INTER-REGIONAL POTATO INTRODUCTION PROJECT (NRSP-6)

J.B. Bamberg and M.W. Martin

Introduction of New Stocks

A total of 78 new accessions were collected in 1995 from Guatemala, Mexico, and the United States.

Dr. Spooner, in collaboration with Dr. V. Martinez (Guatemala), Dr. R. Hoekstra (The Netherlands) and Dr. R. van den Berg (The Netherlands), participated in an expedition to collect wild species of potato in Guatemala, from September 11 to November 5, 1995. This collection trip procured 44 new accessions and 38 herbarium specimens, nearly quadrupling the available wild potato germplasm from Guatemala.

Dr. Bamberg collected 27 accessions from New Mexico and Arizona in a five day collection trip in September 1995. This work is part of the intergenebank research project to investigate genetic drift in nature versus genebank maintenance (see Inter-genebank Collaboration).

Dr. P. Hjerting of The Netherlands spent two weeks in late October 1995 collecting seven accessions of wild potatoes in Mexico and has donated these accessions to NRSP-6.

Preservation and Increase of Stocks

In 1995, 163 accessions were increased. One hundred accessions were received from U.S. Quarantine for a joint seed increase and quarantine virus testing at NRSP-6 in 1995, and 22 accessions were retested because they failed to pass quarantine in 1994. Of the 122 accessions, 68 failed to germinate, 5 were not released by quarantine and 49 are being incorporated into the NRSP-6 inventory.

There were 92 new PI numbers assigned in 1995: 38 from the 1994 joint seed increase with CIP, 27 from Dr. Bamberg's 1995 collection from SW United States, 15 from Dr. Spooner's 1994 collection trip in South America and 12 accessions from previous expeditions.

This year a total of 930 potato spindle tuber viroid (PSTV) tests were performed on seed increases, seed lots and research materials. Germination tests

were performed on 1,296 accessions. Many accessions were concurrently used for PSTV testing of new seedlots, field plantings for testing seedlot purity, or research plantings.

Classification

Dr. Spooner continues to resolve problems in taxonomic classification which impede efficient documentation and use of the germplasm. This year, an extensive study of the *S. brevicaula* complex of species was initiated. Insights gained from this study will allow accessions to be assigned stable species' names based on empirical differences. Because Mexican species are a rich source of late blight resistance, investigations into the taxonomic relationships of these species were also accelerated to provide information for more rational use of these stocks by breeders.

Distribution

NRSP-6 distributed 10,792 units of seed (50 seeds per unit), 157 tuber families and 487 in vitro stocks to clientele in 20 states of the United States and 27 other countries. Internally, NRSP-6 used 18,800 units of seed for chromosome counts, germination tests, identification and taxonomic check plantings, in-vitro maintenance, seed increases, PSTV tests, and miscellaneous plantings. The volume and types of stocks sent to various consignee categories are summarized in Table 1.

Evaluation of Stocks

Mission

The project's mission with respect to evaluation is to locate and characterize useful traits so that the best materials and most efficient approaches are available for subsequent germplasm enhancement.

1. Tuber Traits

Wild species do not produce tubers in the long days of North American summers, so their tuber traits cannot be assessed in the field. A project was initiated in 1993 in which wild accessions are being systematically crossed with adapted (cultivated) forms to produce F2 true seed families. This moved the potential valuable tuber traits of species to a background in which they can be revealed. In the fall of 1994 the first tubers from our F₂ tuber traits project were harvested from the field. In

1995 we continue to produce the F₁ and F₂ seed lots for other accessions in the tuber traits project, and will advertise these to our cooperators as they become available.

2. Frost Hardiness

Work was continued on frost hardiness. New sources of hardiness and breeding combinations exhibited outstanding frost resistance. Crosses were made in 1995 to improve earliness. Evidence of interspecific variation for speed of cold acclimation and deacclimation among wild species was found.

3. Tuber Calcium

Progress was made on a stepwise "fine screening" program identifying species, then accessions within species, then individuals within accessions with outstanding ability to accumulate tuber calcium. This trait has been shown to be closely associated with resistance to important storage rots and other tuber quality traits. These materials will be powerful tools for studying physiology and genetics of the trait and for use in breeding.

4. Colorado Potato Beetle

The CPB project continues to examine the intra-population variation for various parameters of CPB resistance. Significant intra-accession variation was found for every parameter, even in extremely resistant families. The resistant clones within accessions were intermated and seedlots nearly pure for "ultra-resistance" were identified.

5. Glycoalkaloids

A spectrum of species was evaluated for leaf and tuber glycoalkaloids. Accessions with reputed high resistance to Colorado potato beetle and high foliar glycoalkaloids (not leptines in *chacoense*) were deliberately chosen. Some accessions had as much as 18 times the TGA in leaves as tubers. These materials will be further investigated in hopes of finding and characterizing new genetic systems for controlling tissue specificity of glycoalkaloids involved in insect resistance.

6. Root Mass and Nutrient Uptake

A working aeroponic system was developed and calibrated for potato cultivars to assess root parameters that may be valuable for breeding. We are now screening a preliminary sample of *Solanum* germplasm and will eventually screen the entire mini-core collection. This research will provide the

first precise characterization of the diversity available in potato germplasm with respect to root mass and nutrient uptake.

7. Nitrogen-use Efficiency

In 1994 a mini-core collection of 39 wild potato species was evaluated for nitrogen use efficiency given low and high nitrogen applications. In 1995 we crossed the most efficient and inefficient nitrogen accumulators at both high and low nitrogen levels with USW 551, a haploid of Chippewa. In comparing the wild species hybrids to cultivated varieties, it was found that the varieties were average, with the wild species hybrids occupying both the high and low positions for nitrogen use efficiency at both high and low nitrogen levels. This research demonstrates wild *Solanum* species may have great value in breeding for improved nitrogen use efficiency.

8. Bee Pollinations

The seed lots produced in the bee cages in 1994 were evaluated for seed purity and found indistinguishable from the original seed lots. In 1995 we planted out three noncompatible accessions in each of the two bee cages. However, no bees were introduced. We often observe very high fruit set in field plantings and wondered if it was due to wind, spontaneous fruiting, or insects. Plants were maintained in the cages and evaluated for fruiting. No fruit were produced on all 120 plants maintained in the bee cages, so we concluded that caged fruit are due to bees.

9. Characterization for Utility Traits

The success of using *Solanum* germplasm for breeding is influenced by relative plant vigor, flowering, pollen shed and pollen viability. Relative scores for these parameters were published in the *Elite Selections...* publication. Characterization of the collection for these traits continued in 1995.

10. Late Blight Screening

New forms of the late blight pathogen have developed into a severe threat to the US potato crop. In 1995 we had three cooperative screening projects: 1) BC, Canada with Dr. Ormrod; 2) Cornell, New York with Dr. Fry and 3) Toluca, Mexico with Dr. Lozoya-Saldana. Previous screening of germplasm suggested that high levels of resistance exist among wild species. Some materials previously suspected to be resistant were

susceptible, and some materials not previously confirmed as resistant were extremely resistant.

Inter-genebank Collaboration

The sixth meeting of the Association of Potato Inter-genebank Collaborators (APIC) was organized in Bangor, Maine. A world-wide database of wild potato germplasm with evaluation data was completed. These activities significantly increased the quality and the quantity of genetic resources available to US scientists for the improvement of the potato crop.

Dr. Bamberg reported on the joint APIC research project to measure genetic diversity in two model wild potato species. The goal is to use RAPDs to provide answers to questions critical to genebank management: 1) Have accessions lost genetic diversity over several generations of sib-mating in the genebank? 2) Are samples in the genebank collected decades ago still equivalent to a population from the same site in the wild? 3) What geophysical factors best explain patterns of diversity found among collection sites?

When comparing seedlots of successive sibmated increases of an accession, results now indicate that <5% genetic diversity per generation has been lost. Thus we consider techniques in practice at the genebank to have been effective. Recollected populations in the wild are significantly different from gene bank samples originally collected decades previously.

APIC representatives Dr. S. Kiru from VIR (Russia) and Dr. K. Schuler from GLKS (Germany) both visited NRSP-6 for six days following the meeting. This was a great opportunity for the NRSP-6 staff to exchange ideas and techniques with their foreign counterparts on *Solanum* germplasm maintenance problems.

Usefulness of Findings

NRSP-6's purpose is to provide a ready source of raw materials, technology and information which support potato enhancement, breeding and research in the US and around the world. Thus, one way the success of NRSP-6 can be measured is by the use of NRSP-6 germplasm in the pedigrees of new, improved potato cultivars. Another is in the use of NRSP-6 stocks in more basic research programs

which also ultimately contribute to human utilization of the potato crop, these being reflected in publications.

Six cultivar releases were published in the American Potato Journal in 1995: 'Amisk', 'A.C. Belmont', 'A.C. Brador', 'A.C. Chaleur', 'A.C. Novachip', and 'Portage'. All are known to have wild species' introductions in their pedigrees.

Research conducted in the United States and other countries provide evidence of the importance of continued utilization of the NRSP-6 germplasm collection. NRSP-6 has documented 101 papers, 26 abstracts, and 4 theses reporting the use of NRSP-6 *Solanum* introductions this year.

Table 1. Volume and Types of Stocks Distributed.

Units ¹					
Category	S	TF	IVS	TOTAL	PI's
Domestic	4,127	157	417	4,701	3,312
Foreign	6,665 ³	0	70	6,735	1,432
NRSP-6 ²	18,800	0	0	18,800	1,523
Total	29,592	157	487	30,236	6,267

¹ Types of stocks sent (number of seeds, tubers or plantlets per standard shipping unit): S=True Seeds (50), TF=Tuber Families (10), IVS=*in vitro* stocks (1).

² Includes chromosome counts, germination tests, ID and Taxonomic check plantings, *in vitro* maintenance, seed increases, PSTV tests, and miscellaneous plantings.

³ Includes 2,480 units to Chile and 1,257 units to Argentina, as agreed in the collection agreement to provide 2,000 seeds of all accessions collected in the cooperating country.

COLORADO

D. G. Holm and J. D. Wick¹

Objectives

The major objectives of the Colorado breeding program are: (1) to develop new potato cultivars (russets, chippers, and reds) with increased yield, improved processing and fresh market quality, resistance to diseases and pests, and tolerance to environmental stresses; (2) to provide a basic seed source of selections for possible seed export.

Breeding Program

Fifty-four parental clones were intercrossed in 1995. Seeds from 172 combinations were obtained. One hundred six seedling families were grown in the greenhouse producing 39,925 seedling tubers for initial field selection in 1996. Surplus tubers (second thru fourth sizes) will be distributed to Idaho, Minnesota, Oregon, Texas, and Alberta, Canada.

A second smaller planting of seedlings was also undertaken. These families resulted from crosses to develop germplasm for yellow fleshed russets, reds, and chippers; purple/blue/red fleshed chippers; and late blight resistance in russets, reds, and chippers. Thirty-five of these families were grown in the greenhouse producing 5,105 seedling tubers for field selection in 1996. Surplus tubers will be distributed to Texas.

Seedling tubers were obtained from Dr. J. J. Pavék, USDA-ARS, Aberdeen, Idaho; Dr. J. Creighton Miller, Texas A&M, Lubbock, Texas; Dr. Dermot Lynch, Agriculture Canada, Lethbridge, Alberta; Dr. Gary Secor, North Dakota State University, Fargo, North Dakota; and Dr. Robert E. Hanneman, USDA-ARS, Madison, Wisconsin.

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Selection Program

A total of 59,745 first-year seedlings were planted with 771 being selected at harvest for further observation. Another 764 clones were in 12-hill, preliminary, and intermediate stages of selection. One hundred eighty-nine of these clones were saved at harvest for further evaluation. Thirty-four advanced selections were saved and contingent on additional evaluations will be increased in 1996. Another 163 selections were maintained for germplasm development, breeding, or other experimental purposes.

Advanced Yield Trial. Twenty-eight clones, 26 advanced selections and 2 cultivars, were evaluated in the Advanced Yield Trial. Results on yield, grade, and processing characteristics are summarized in Tables 1 and 2.

Advanced russet selections in this trial that have been released to growers for evaluation or that show promise for release in 1996 are AC78069-17, CO80011-5, CO81082-1, CO82142-4, and COO83008-1. COO83008-1 has been evaluated extensively in the Western Regional Trials.

Selections with good processing potential are AC82363-3, AC87123-4, AC88042-1, CO86030-1, CO87009-4, CO87062-6, CO87140-3, COO83008-1, TC1406-1, and W1005.

Western Regional Main Trial. Eighteen selections and six cultivars were grown in the Western Regional Main Trial. This cooperative trial is conducted at several locations in the Western United States.

Selections entered by Colorado were AC83064-1, AC83064-6, AC84487-1, CO84074-2, and CO85026-4. Both AC83064-1 and AC83064-6 graduated from the trials after being entered for three years. AC84487-1 and CO84074-2 were discarded from further evaluation.

Several selections had excellent yield and grade in Colorado. The average total yield for the trial was 347 cwt with 83.3% US #1 tubers. Many of the selections produced acceptable french fries also. Selections with notable fry scores were A81386-1, A84420-5, AC83064-6, and AC84487-1. A84420-5 had the highest specific gravity (1.107) of any clone tested this year.

Results of this trial are presented in the Western Regional Trial report elsewhere in this publication.

Western Regional and Advanced Chipping Trial. The Colorado Western Regional Chip Trial also included intermediate and advanced chipping selections from our program that were not formally entered into the regional

trial. Colorado trial results are presented in Tables 3 and 4.

Colorado first entered BC0894-2 into the Western Regional Chip Trial in 1994. This selection is early maturing and continues to show potential as a "cold" chipper. BC0894-2 was also entered into the Snack Food Association (SFA) Trials in 1995 and will be tested again in 1996. A Texas selection showing considerable potential is ATX85404-8. It will be initially entered in the SFA Trials in 1996.

Several other selections are also showing potential as "cold" chippers.

New Colorado selections to be entered in the Western Regional Chip Trials in 1996 are AC87313-3 and CO87106-5.

Western Regional and Advanced Red Trial.

This was the third year for a formalized Western Regional Red Trial. The Colorado Western Regional Red Trial also included red selections from our program that were not formally entered into the regional trial. Trial results are summarized in Table 5. Entries originating in Colorado were CO86142-3 (NDTX302-1 x Redsen), CO86218-2 (Sangre x NDTX9-1068-11R), COTX86146-2 (NDTX9-1068-11R x Chieftain). COTX86146-2 will be discarded from further evaluation.

Generally the selections being evaluated have excellent skin color. DT6063-1R will be entered into the 1996 Western Regional Red Trial to gain additional information on adaptability prior to naming.

NDC4069-4 showed potential susceptibility to blackspot bruising. This is a red-fleshed selection. Several reds had significant levels of enzymatic browning.

Grower Evaluations. Grower evaluations were conducted on ten russets (AC78069-17, AC83064-1, AC83064-6, AC83068-1, AC84487-1, CO80011-5, CO84074-2, CO81082-1, CO82142-4, and CO86026-4).

Selections AC83068-1, AC84487-1, CO84074-2 were discarded from further evaluation.

Two chipping selections (ATX85404-8 and BC0894-2) and two red selections (CO86142-3 and CO86218-2) are scheduled to be released for initial grower evaluations in 1996. Data on

these and other advanced selections are summarized in Table 6.

Cultivar Releases. Growers recommended naming AC78069-17 and CO80011-5 (Crestone Russet). Regardless of some production problems observed with CO80011-5 growers are generally pleased with the performance of CO80011-5. CO80011-5 will be released by the Colorado Agricultural Experiment Station as a high yielding, medium-early maturing, fresh market potato. AC78069-17 will be released as a high yielding, medium-late maturing, dual purpose (fresh and processing) potato.

CO083008-1 will likely be named in 1996 or 1997. This will be a joint release by Oregon, Colorado, Idaho, and Washington Agricultural Experiment Stations. This selection has excellent processing qualities.

Century Russet (A74212-1E), a high yielding, medium-late maturing, fresh market cultivar, was named and released in 1996 jointly by the Oregon, Idaho, Washington, Colorado, California, and Texas Agricultural Experiment Stations and the USDA-ARS.

Russet Norkotah Selection Studies. A three-year study evaluating Russet Norkotah selections was completed in 1995. The objective of this study was to determine if improvement in Russet Norkotah could be made through clonal selection for larger vines and later maturity.

Forty clonal selections of Russet Norkotah were selected from two tuber-united certified seed lots in 1990. These selections were increased and evaluated for vine vigor in 1991 and 1992. Additionally another 10 selections were made from a seed lot at the SLV Research Center in 1991 and increased and evaluated for vine vigor in 1992.

Eleven of the original 50 clonal selections were retained for further evaluation in yield trials in 1993 and 1994. Five clones evaluated in 1993 and 1994 were selected for further evaluation in 1995. Nitrogen was applied at a rate of 140 lbs/acre each year.

Table 7 presents a three-year summary of the Russet Norkotah selection study. Based on three years results, selections 3 and 8 have on the average have had greater total and US #1 yields than the standard Russet Norkotah.

Colorado Table 1. Yield, grade, tuber shape, and skin type for Advanced Yield Trial clones - 1995.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			< 4 oz	
		Total	%	> 10 oz		
AC78069-17	406	363	89.4	153	34	Ob,Ru
AC82359-1	331	265	80.1	68	62	L,Ru
AC82363-3	447	398	89.0	101	45	L,Ru
AC83068-1	487	410	84.2	113	65	Ob,Ru
AC84437-2	430	374	87.2	89	41	Ob,Ru
AC87084-3	470	411	87.4	151	49	Ob,Ru
AC87123-1	346	274	78.7	46	62	Ob,Ru
AC87123-4	329	298	90.5	76	30	Ob,Ru
AC88042-1	323	198	61.4	11	119	L,Ru
AC88070-3	384	328	85.4	134	41	L,Ru
AC88162-4	357	280	78.4	47	62	L,Ru
AC88165-3	415	339	81.8	80	67	L,Ru
CO80011-5	407	357	87.7	99	43	Ob,Ru
CO81082-1	308	261	84.4	76	45	L,Ru
CO82142-4	335	309	92.4	89	22	L,Ru
CO86030-1	427	389	91.1	202	28	L,Ru
CO86153-2	373	327	87.6	111	40	Ob,Ru
CO87009-4	406	314	77.4	41	91	Ob,Ru
CO87062-5	386	310	80.5	176	36	L,Ru
CO87062-6	346	284	81.7	142	30	L,Ru
CO87140-3	292	225	76.7	21	65	Ob,Ru
CO88043-3	331	235	70.6	35	89	L,Ru
COO83008-1	382	338	88.4	126	35	Ob,Ru
TC1406-1	405	329	81.1	105	72	Ob,Ru
TC1412-5	410	373	91.2	129	29	Ob,Ru
W1005	411	337	81.8	103	62	L,Ru
Centennial Russet	226	160	70.2	9	65	Ob,Ru
Russet Nugget	423	341	80.4	67	73	Ob,Ru
Mean	378	315	82.7	93	54	-----
LSD ² (0.05)	44	44	4.9	44	16	-----

¹Tuber shape & skin type: Ob=oblong; L=long; Ru=russet.

²LSD=least significant difference.

Colorado Table 2. Specific gravity, french fry color, and texture for Advanced Yield Trial clones - 1995.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	7 wks 50F+ 8 wks 45F	At Harvest	7 wks 50F+ 8 wks 45F
AC78069-17	1.082	2	3	3	3
AC82359-1	1.088	2	3	3	3
AC82363-3	1.097	2	2	4	4
AC83068-1	1.079	3	3	3	3
AC84437-2	1.088	2	3	4	3
AC87084-3	1.089	2	3	4	4
AC87123-1	1.091	3	2	3	3
AC87123-4	1.081	2	2	3	4
AC88042-1	1.075	2	2	2	3
AC88070-3	1.078	4	4	3	4
AC88162-4	1.089	4	4	3	3
AC88165-3	1.079	4	3	2	2
CO80011-5	1.071	3	3	2	2
CO81082-1	1.075	4	4	2	2
CO82142-4	1.086	4	4	2	2
CO86030-1	1.075	2	2	1	2
CO86153-2	1.081	2	3	3	2
CO87009-4	1.087	1	0	4	4
CO87062-5	1.073	3	3	2	2
CO87062-6	1.072	2	2	2	2
CO87140-3	1.087	1	1	4	4
CO88043-3	1.075	3	3	2	2
COO83008-1	1.085	1	2	4	3
TC1406-1	1.085	1	1	2	2
TC1412-5	1.100	3	3	3	3
W1005	1.088	1	1	2	2
Centennial Russet	1.077	4	4	2	2
Russet Nugget	1.095	2	2	4	4

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings less than or equal to 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry, with 1 representing a soggy, wet texture.

Colorado Table 3. Yield, grade, tuber shape, and skin type for Western Regional Chip Trial clones - 1995.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	> 10 oz		
AC87313-3	425	368	86.7	125	54	R,W
AC87340-2	429	370	86.1	115	55	R,W
AC88356-1	437	348	79.5	126	53	Ov,W
AC88357-3	352	271	76.9	69	80	R,W
ATX85404-8	480	381	79.3	117	95	R,W
BC0894-2	341	298	87.4	112	42	R,W
CO87017-5	383	309	80.8	48	68	R,W
CO87106-5	407	316	77.4	83	82	Ov,W
NDC4327-2	407	303	74.1	38	104	R,W
Atlantic	402	361	89.8	192	29	R,W
Chipeta	455	380	83.6	109	68	R,W
Superchip	260	189	72.4	36	71	R,W
Mean	398	325	81.2	98	67	-----
LSD ² (0.05)	53	54	6.2	40	21	-----

¹Tuber shape & skin type: Ov=oval; R=round; W=white.

²LSD=least significant difference.

Colorado Table 4. Chip color¹ after various storage regimes and specific gravity of Western Regional Chip Trial clones - 1995.

Clone	Specific Gravity	7 wks 40F	7 wks/40F + 3 wks/60F	7 wks 50F	7 wks/50F + 3 wks/60F
AC87313-3	1.089	2.5	1.5	1.0	1.0
AC87340-2	1.081	3.0	1.5	1.0	1.0
AC88356-1	1.089	2.5	2.0	2.0	2.0
AC88357-3	1.091	3.0	2.0	1.5	1.5
ATX85404-8	1.089	2.5	2.5	1.5	1.5
BC0894-2	1.077	2.5	2.5	1.0	1.0
CO87017-5	1.099	3.5	2.5	1.5	2.0
CO87106-5	1.097	4.0	3.0	2.5	2.5
NDC4327-2	1.081	3.5	2.5	1.5	1.0
Atlantic	1.094	3.5	3.0	2.5	2.5
Chipeta	1.089	4.5	3.0	3.0	2.0
Superchip	1.086	4.0	1.5	1.0	1.5

¹ Chip color was rated using the Snack Food Association 1-5 scale.
Ratings less than or equal to 2.0 are acceptable.

Colorado Table 5. Yield, grade, tuber shape, and skin type for Western Regional Red Trial clones - 1995.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			< 4 oz	
		Total	%	> 10 oz		
AD82706-2	427	359	83.8	102	65	R,R
BC1145-1	310	202	65.0	12	107	R,R
CO86142-3	292	228	78.2	37	63	R,R
CO86218-2	290	226	77.6	70	61	R,R
CO89097-2	390	310	79.6	116	74	Ov,R
COO86107-2	312	214	68.5	56	97	R,R
COTX86146-2R	407	347	85.3	187	50	R,R
DT6063-1R	363	307	84.4	149	48	Ob,R
NDC4069-4	441	268	60.7	26	172	R,R
Norland (DR)	376	322	85.7	136	46	Ov,R
Red LaSoda	442	378	85.5	212	44	Ov,R
Sangre-10	410	358	87.4	201	42	Ov,R
Mean	372	293	78.5	109	72	-----
LSD ² (0.05)	42	43	5.4	48	14	-----

¹Tuber shape & skin type: R=round; Ov=oval; Ob=oblong; R=red.

²LSD=least significant difference.

Colorado Table 6. Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects - 1995.

Clone	Usage ¹	Loc x Years	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects ³	% Hollow Heart ⁴
Russets								
CO80011-5	FM	10	383	83.6	2.4	1.072	2.9	0.0
AC78069-17	FM/FRY	9	407	88.2	3.4	1.084	4.4	0.2
CO81082-1	FM	9	335	85.4	2.1	1.075	0.7	0.5
CO82142-4	FM	8	377	91.9	3.5	1.086	1.0	0.3
AC83064-1	FM	7	456	88.5	3.1	1.077	1.4	0.0
AC83064-6	FM/FRY	7	383	86.4	3.0	1.079	0.9	0.1
CO85026-4	FM	5	363	89.7	3.6	1.083	2.6	0.0
Centennial Russet	FM	29	291	77.8	3.0	1.081	0.9	0.4
Russet Norkotah	FM	16	281	83.0	1.3	1.075	1.9	0.2
Russet Nugget	FM/FRY	19	396	81.0	3.8	1.095	1.6	0.2
Chippers								
ATX85404-8	CHIP	4	452	74.1	2.9	1.089	0.7	0.0
BC0894-2	CHIP	4	376	84.6	1.6	1.078	0.7	0.0
Atlantic	CHIP	9	406	86.9	3.3	1.097	1.5	2.1
Chipeta	CHIP	10	467	84.5	3.4	1.092	2.9	0.0
Reds								
CO86142-3	FM	4	347	80.2	1.1	1.076	1.3	0.0
CO86218-2	FM	4	361	80.8	2.8	1.074	1.0	0.0
DT6063-1R	FM	2	404	87.6	2.7	1.080	2.4	0.4
Sangre	FM	13	423	84.8	2.7	1.074	0.8	0.2

¹FM=fresh market; FRY=french fry.

²Vine maturity: 1=very early; 2=early; 3=medium; 4=late; 5=very late.

³Includes defects such as growth crack, second growth, misshapen, and green.

⁴Based on tubers greater than 10 ounces.

Colorado Table 7. Three-year summary (1993-1995) for yield, grade, plant height and vine maturity for Russet Norkotah clones.

Clone	Yield (Cwt/A)					Plant Height (in)	Vine Maturity ¹
	Total	US #1			< 4 oz		
		Total	%	> 10			
2	381	273	71.0	75	95	19.8	2.7
3	447	409	90.9	225	26	20.3	3.2
4	371	273	73.2	49	91	20.9	2.8
5	377	262	69.4	38	108	21.2	2.7
8 ₂	370	336	90.2	174	23	16.0	2.4
12 ₂	297	266	89.1	116	25	12.9	1.5
13 ₂	266	232	87.0	68	29	12.1	1.4
14 ₂	332	295	88.5	112	29	13.5	1.8
Mean	355	293	82.4	107	53	17.1	2.3
LSD ³ (0.05)	46	54	6.3	60	26	1.5	0.6

¹Vine maturity is rated on the following basis: 1=very early; 2=early; 3=medium; 4=late; and 5=very late.

²Standard clones selected from grower lots. Clone 14 is from the SLV Research Center.

³LSD= least significant difference.

Idaho

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Replicated Variety Trials

Potato variety trials were conducted at Aberdeen, Raft River, Kimberly, and Parma, Idaho. All four locations are in southern Idaho, along the Snake River plain and represent a wide range of environments and growing conditions. The Aberdeen, Kimberly, and Parma trials were located on experiment stations and represent sites with 130, 150, and 160 growing days, respectively. These three sites are located amid major potato production areas. Raft River is a commercial production site with a 130 day season. The soils in the Raft River area are saline and conditions are conducive to producing potato crops with low specific gravity and poor appearance.

The trials were planted between April 12 and May 10 and harvested between September 13 and October 5. Crop management practices were designed to mimic those used in the surrounding growing areas. All trials were planted using a randomized complete block design with either four or six replications. Plots consisted of single rows, twenty feet long, with an exception being the Parma trial which had three row plots with the center row used for data collection.

Following harvest, the plots were weighed, graded, and sampled for internal quality evaluations. Depending on the objectives of the trial, samples were taken for evaluation of blackspot bruise, shatter bruise, internal defects, specific gravity, fry color, and/or dry matter yield.

Four of the nine trials were conducted to evaluate dual purpose russet-skinned or long-white processing selections (Tables 1, 2, 6, 8). Two were conducted to evaluate chipping selections (Tables 5, 7). The Raft River trial included both chippers and russets (Table 9). The remaining two trials were grown to evaluate high dry matter selections intended for use by the dehydration industry (Tables 3, 4).

The advanced breeding selections were evaluated in both Aberdeen and Kimberly (Tables 1, 2). Yield performance of most selections was good, with all but three selections in Aberdeen and all but two in Kimberly, outyielding Russet Burbank. All but one clone (in Kimberly) produced a higher percentage of U.S. No. 1's than Russet Burbank, and tuber specific gravity of all selections was excellent. Some

selections had a high percentage of tubers with hollow heart, especially at Kimberly.

All advanced high dry matter clones evaluated in 1995 had a higher yield of dry matter than Russet Burbank (Tables 3, 4). Most achieved high dry matter yield through a combination of high tuber yield and a high percentage of tuber dry matter as indicated by specific gravity. Only one clone in each trial had a lower tuber yield than Russet Burbank. Three clones, A88345-2, A8836-5, and A82360-7, performed well at both locations.

In recent trials, chipping selections have been compared to Atlantic, Gemchip, and Chipeta rather than Norchip. These varieties are higher yielding than Norchip, have higher specific gravity, and often have better chip color. This has elevated selection criterion to a new level. Three of the selections in the Western Regional trial, ATX85404-7, NDA2031-2, and NDO1496-1, compared favorably to Atlantic and Chipeta for yield (Table 7). All four selections had better fry color than the standards and expressed some ability to chip from 40°F storage. In the advanced chipping trial, only three clones yielded as well as the standards (Table 5). Chip color of the selections was variable with the majority being better than the standards.

All selections in the Idaho location of the Tri-state (Idaho, Oregon, Washington) trial had yields higher than Russet Burbank (Table 6). However, several selections showed some weaknesses. A8787-2 was prone to blackspot bruising, A86102-6 had poor fry color, and AWN85540-1 and AWN85510-2 lacked fresh market appearance due to light colored skin and oval shape.

The Parma trial was designed to test for yield and processing quality in what can often be a hostile environment due to warm temperatures (Table 8). Only AO82611-7 outyielded Russet Burbank, but all selections had a higher percentage of U.S. No. 1's. All clones had some incidence of sugar-ends, but the selections were lower than Russet Burbank and AO82611-7 had only 13 percent.

Because of the saline soil conditions, the Raft River trial produced results that were atypical of other sites (Table 9). Only clones adapted to the local conditions performed well. Among the russets, only four had acceptable specific gravity. All four chipping clones had specific gravity above 1.080. The overall best clone at Raft River was A8495-1.

Sensory Evaluations

Five breeding selections were compared to Russet Burbank in sensory evaluation of baked tubers. The evaluation was conducted as a double blind test at the Bingham County Extension Office. Tubers were baked in a convection oven, then rated by trained panelists for color, texture, flavor, and overall quality. The taste panel was conducted twice, once within a month of harvest and again after five months of storage at 40°F.

At harvest, all five breeding selections were equal to or better than Russet Burbank for all sensory quality categories (Table 10). COO83008-1 was superior to Russet Burbank for all four sensory categories. A8495-1 was superior in all categories except texture.

Following four months of storage A8495-1 was the highest rated clone and was superior to Russet Burbank for all four sensory categories. COO83008-1 and A81386-1 were also ranked high in every category except color, for which they were equal to Russet Burbank. Following storage, A86102-6 fell to the worst ranking in the texture and flavor categories.

Metribuzin Screening

Five named varieties and thirty-five breeding selections were tested for response to the herbicide metribuzin (Secor/Lexone). Information was collected on visible foliar injury and on vigor following a post-emergence application (on 8-10 inch plants) of 1.0 lb/A a.i. Yield loss for the treated plots was predicted using a model developed previously. Each variety or selection was assigned a relative resistance score based on yield loss.

In general, overall injury was not as severe in 1995 as in previous years (Table 11). However, yield loss in sensitive clones was near 50%. Most of the russet and long white selections were very resistant to injury. Shepody, a variety used as a sensitive check, was very susceptible to injury, as was W1099, a russet-skinned selection from Wisconsin. A84420-5, AC83064-6, and AO80432-1 showed some yield loss and were classified as moderately resistant.

One chipping selection from Texas, ATX85404-8, was very susceptible to injury. Also, all of the red-skinned clones except two showed some yield loss. The red breeding selections varied from very resistant to very susceptible in their response to metribuzin injury.

Late Blight Screening

In response to a growing problem with late blight in the northwest, a program was initiated to screen for late blight resistance within Aberdeen germplasm. Because late blight is not consistently present in Idaho, arrangements were made to screen material in Corvallis, Oregon, and Mt. Vernon, Washington. The trials were conducted by Mary Powelson and Debra Inglis at the two locations, respectively.

In both locations, artificial inoculation was used to augment infection. Disease progress was monitored and Area Under Disease Progress Curve calculated. At seasons end, determination of *Phytophthora infestans* strains present in the plots was made. At Corvallis, both US1-A1 and US8-A2 were found, while at Mt. Vernon, only US11-A1 was documented.

A wide range of resistance was found among the material tested (Tables 12, 13). Three clones, AWN86514-2, AWN86524-5, and Bzura, showed good resistance at both locations. Of the advanced clones (those with commercial potential) A84118-3, A8792-1, and COO83008-1 showed some moderate resistance.

Summary of Promising Breeding Selections

Several clones performed well in 1995 as well as in previous years. These selections have potential for release if superior performance continues. These clones are: COO83008-1, AO82611-7, A8495-1, A84118-3, A81386-1, A81473-2, A82360-7, ATX85404-8, NDA2031-2, NDO1496-1, and A82705-1R.

COO83008-1 is currently being released by Oregon. It is the result of an Oregon selection from a Colorado seedling tuber family made by crossing Century Russet with WNC672-2 (A6334-20 x Lenape). In 1995, COO83008-1 produced yields similar to Russet Burbank (Tables 8, 9). It produced over 80% U.S. No. 1's, had high specific gravity, and good internal quality. COO83008-1 was the highest ranked clone in the fall baked potato sensory panel. It also showed some resistance to late blight. All of these results are consistent with past years.

AO82611-7 is being considered for release by Oregon. It is an Oregon selection from an Aberdeen seedling family created by crossing Butte with A77268-4 (Lenhi Russet x Norchip). In 1995 it produced higher yields and better grade than Russet Burbank (Tables 8, 9). It also had high specific

gravity, good internal quality, and showed resistance to sugar-ends at Parma. This clone has performed especially well, for several years, in the warmer growing areas of the region.

A8495-1 is a medium maturing selection with outstanding appearance. It resulted from a cross of A77182-1 (Atlantic x Lemhi Russet) and Russet Norkotah. In 1995 it produced higher yields than Russet Burbank at all locations except Parma (Tables 1, 2, 8, 9). At all locations it produced over 80% U.S. No. 1's. Consistent with previous years, it exhibited high specific gravity and exceptional fry color. A8495-1 ranked first in the post-storage baked potato sensory panel.

A84118-3 is the result of a cross between A77236-6 and TND329-1Rus. It yielded more than Russet Burbank in every location except Parma (Tables 1, 2, 8, 9). Its grade and quality characteristics were good to excellent. A84118-3 was rated similar to Russet Burbank in the baked potato sensory panel.

A81386-1 is a cross between A74341-4 and Ranger Russet. In the past, it has produced exceptional fry color scores after storage, but had only mediocre specific gravity. These trends continued in 1995 (Tables 1, 2, 8). It generally produced yields similar to Russet Burbank. In some trials, it also showed some tendency for blackspot bruising.

A81473-2 is a clone that has shown itself to be too late in maturity for eastern Idaho producing areas, but has performed well in western Idaho and in Washington and Oregon. It is a cross between A75175-1 (Targhee x A67490-3) and A75188-3. In 1995 it outyielded Russet Burbank by a substantial margin at Aberdeen and Kimberly, was similar at Raft River, but was lower yielding at Parma (Tables 1, 2, 8, 9). It tended to produce an abundance of large tubers and had good internal quality.

A82360-7 is the first clone developed as part of the high dry matter project. It is an oval shaped, russet skinned selection. It resulted from a cross of A77182-1 (Atlantic x Lemhi Russet) and A75188-3. In the high dry matter trials in 1995, it outyielded Russet Burbank by 25% (Tables 3, 4). It also had high specific gravity, giving it a proportionally higher dry matter yield. A82360-7 was relatively free of internal problems and had good fry color scores, consistent with previous years.

ATX85404-8 is a new clone from the Texas program. It is the result of an Aberdeen cross between Gemchip

and ND860-2. In the Aberdeen location of the regional chip trial, it exhibited the yielding ability of the female parent, while showing some of the cold chipping characteristics of ND860-2 (Table 7).

NDA2031-2 has historically shown high yield potential combined with cold chipping ability. It is a cross of Rosa and AND16-1 (andigena derivative). In 1995 it produced similar yields to Chipeta (Tables 5, 7). Its chip colors were darker than normal, probably due to immaturity resulting from a cool growing season. This clone has had an occasional problem with clinging stolons, but this was not a problem in 1995.

NDO1496-1 is a cross of ND292-1 and A77268-4 (Lemhi Russet x Norchip). It was selected in Oregon from a North Dakota seedling family. In 1995, it was lower yielding than Chipeta but higher than Atlantic (Tables 5, 7). This is consistent with past years. It also had high specific gravity, no internal problems, and good chip color, even from 40°F storage. Historically, NDO1496-1 has shown exceptional reconditioning characteristics. It has also been prone to shatter bruise problems, but this was not evident in 1995.

A82705-1R will likely be released under the name IdaRose. It is a dark red, high yielding fresh market potato. It resulted from a cross of Sangre and TXA218-7 (NDTX9580-6R x Viking). A82705-1R was not included in any of the trials reported here but has historically produced yields similar to Red LaSoda while exhibiting few, if any, internal defects. It is late maturing and is prone to skinning if harvested immature.

IDAHO TABLE 1. Russet potato advanced clone trial grown at Aberdeen, Idaho in 1995.

Clone	Total Yield	Culls and						Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³		Merit ⁴ Score
		U.S. No. 1's		U.S. No. 2's		40°F	45°F						
		Yield	%	>12 oz	<4 oz						Malformed		
-----cwt/acre----- % ----- -%--													
Russet Burbank	358	236	66	5	27	31	3	1.081	6	3.0	2.9	0.7	3.0
Lemhi Russet	426	358	84	23	42	11	5	1.088	10	4.7	1.8	0.5	4.0
Ranger Russet	425	383	90	15	59	6	3	1.092	4	4.0	2.9	0.6	4.0
A8894-8	486	418	86	27	47	8	7	1.088	5	2.8	3.5	0.8	4.7
A86102-6	481	409	85	19	47	9	6	1.089	0	1.9	3.3	0.9	3.7
A81473-2	471	438	93	54	33	4	3	1.087	5	2.9	2.0	0.5	3.3
A85103-3	403	367	91	22	50	8	0	1.093	15	2.2	1.7	1.0	4.0
A8495-1	396	360	91	29	47	8	2	1.090	3	3.6	2.5	0.5	4.0
A89804-7	383	333	87	31	47	5	7	1.085	10	1.4	1.3	0.8	2.3
A84118-3	382	340	89	14	52	10	1	1.093	12	1.8	2.1	0.6	4.3
A81386-1	364	291	80	23	38	18	3	1.082	0	3.5	1.0	0.4	3.3
A8914-4	347	257	74	17	42	8	18	1.088	0	2.7	3.2	1.1	3.3
COA89115-3	334	264	79	20	38	18	3	1.083	3	2.4	2.8	1.0	3.7
A88108-7	334	294	88	28	46	10	3	1.096	0	3.2	1.8	0.5	4.7
Mean	399	335	84	23	44	11	5	1.088	6	2.9	2.3	0.7	3.7
LSD (.05)	46							0.003		0.4	0.6	0.4	0.8

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F until late February.⁴ Merit Score is similar to a breeder's preference rating and is based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 2. Russet potato advanced selection trial grown at Kimberly, Idaho in 1995.

Clone	Total Yield	U.S. No. 1's				U.S. No. 2's		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³		Merit ⁴ Score
		Yield	%	> 12 oz	6 to 12 oz	< 4 oz	Malformed				40°F	45°F	
-----cwt/acre-----													
----- % -----													
----- % -----													
Russet Burbank	353	272	77	13	38	17	7	1.081	3	2.6	2.2	1.2	3.5
Lemhi Russet	428	364	85	16	51	10	5	1.091	14	4.6	1.4	0.9	3.0
Ranger Russet	445	392	88	15	60	6	6	1.096	0	3.6	1.9	0.7	3.8
A86102-6	502	437	87	31	45	4	9	1.097	5	2.0	2.5	2.0	2.8
A8894-8	475	399	84	38	36	6	11	1.095	13	2.8	2.5	1.5	3.0
A85103-3	464	408	88	29	45	8	4	1.101	40	2.2	1.6	1.0	3.8
A81473-2	461	433	94	47	40	4	2	1.099	13	2.4	1.8	0.8	3.8
A89804-7	450	410	91	36	47	3	6	1.094	55	1.5	0.8	1.1	2.0
A8495-1	441	406	92	17	59	7	2	1.097	11	3.5	1.7	1.0	4.3
A84118-3	419	373	89	12	60	10	1	1.104	10	2.6	1.8	0.8	3.8
COA89115-3	399	339	85	18	47	14	2	1.090	4	2.1	2.0	1.6	2.8
A81386-1	384	334	87	26	49	8	5	1.086	3	3.8	0.8	0.3	3.3
A88108-7	338	294	87	22	51	4	8	1.096	3	3.2	1.3	0.7	3.5
A8914-4	330	188	57	12	35	4	39	1.100	8	2.3	2.3	1.4	1.8
Mean	421	358	85	24	47	7	8	1.095	14	2.8	1.7	1.1	3.2
LSD (.05)	62							0.004		0.4	0.3	0.5	0.8

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F until late February.⁴ Merit Score is similar to a breeder's preference rating and is based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 3. High dry matter potato advanced clone trial grown at Aberdeen, Idaho in 1995.

Clone	Total Yield	U.S. No. 1's		Culls & U.S. No. 2's		Specific Gravity	Hollow ¹ Heart -%	Blackspot ² Bruise	Fry ³ Color	Dry Matter Yield
		Yield	%	> 12 oz	6 to 12 oz					
	-----cwt/acre-----				%					lb/A
Russet Burbank	319	226	71	4	34	1.081	10	2.9	1.0	6,700
Lemhi Russet	369	299	81	11	49	1.080	5	4.1	0.5	7,700
A88345-2	484	436	90	35	45	1.089	3	3.5	4.0	10,960
A8836-5	449	391	87	19	48	1.095	3	2.8	1.0	10,700
A82360-7	422	359	85	16	47	1.094	0	2.7	0.6	10,010
A80559-2	375	330	88	10	55	1.108	11	3.2	0.4	9,900
A88245-8	416	358	86	12	54	1.091	27	1.8	0.8	9,600
A88103-1	394	323	82	28	40	1.095	37	3.0	0.7	9,450
A84420-5	343	254	74	5	36	1.110	13	3.0	0.3	9,260
A8972-8	401	361	90	19	55	1.089	0	1.5	1.3	9,100
A8787-2	353	237	67	4	33	1.104	0	4.6	0.4	9,040
A8991-2	414	339	82	22	47	1.083	10	2.7	1.8	8,930
AWN84181-9	365	288	79	15	47	1.097	0	2.0	0.8	8,860
A8842-5	394	323	82	13	50	1.088	0	2.8	0.5	8,830
A89130-5	377	305	81	8	47	1.091	40	2.6	1.2	8,710
A8913-8	311	271	87	8	53	1.102	15	2.4	1.0	7,860
Mean	387	317	82	14	46	1.093	10	2.8	0.8	9,100
LSD (.05)	28					0.005		0.6	0.4	760

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 rating with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

IDAHO TABLE 4. High dry matter potato advanced clone trial grown at Kimberly, Idaho in 1995.

Clone	Total Yield	U.S. No. 1's		Culls & U.S. No. 2's		Specific Gravity	Hollow ¹ Heart --%--	Blackspot ² Bruise	Fry ³ Color	Dry Matter Yield lb/A
		Yield	%	> 12 oz	6 to 12 oz					
		-----cwt/acre-----	-----	-----	----- % -----					
Russet Burbank	413	335	81	9	48	13	7	3.0	1.3	8,620
Lemhi Russet	477	420	88	13	57	8	3	4.4	0.7	11,080
A8836-5	565	509	90	30	46	8	0	3.3	0.6	13,780
A88345-2	575	518	90	31	48	9	3	3.8	3.6	13,400
A8787-2	461	392	85	11	51	14	0	4.7	0.3	12,630
A82360-7	488	405	83	13	53	14	3	2.8	0.4	12,410
A88245-8	478	402	84	16	52	11	20	2.1	0.5	11,960
A8972-8	488	444	91	28	49	7	0	1.5	1.3	11,850
AWN84181-9	461	341	74	6	52	12	22	2.0	0.9	11,800
A8991-2	514	427	83	36	37	9	5	3.2	1.8	11,590
A84420-5	399	335	84	6	51	14	0	3.5	0.4	11,500
A8913-8	415	374	90	15	58	9	8	2.8	0.6	11,480
A8842-5	490	426	87	22	52	7	0	2.5	0.5	11,230
A80559-2	418	376	90	14	60	9	11	2.5	0.5	11,140
A89130-5	436	344	79	7	49	17	5	2.5	1.2	10,540
A88103-1	390	320	82	19	45	10	62	2.8	0.9	9,970
Mean	467	397	85	17	51	11	11	3.0	0.8	11,600
LSD (.05)	47							0.4	0.3	136

¹ Hollow heart was measured by cutting tubers > 12 oz.

² 1-5 rating with 1 = resistant, 5 = susceptible.

³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

IDAHO TABLE 5. Advanced chipping clone trial grown at Aberdeen, Idaho in 1995.

Clone	Total Yield	U.S. No. 1's		Culls and		Specific Gravity	Hollow ¹ Heart	Blackspot ²		Chip Color ³		Merit ⁴ Score		
		Yield	%	> 12 oz	4 to 12 oz			U.S. No. 2's < 4 oz	Malformed	Bruise	Feb45°F		Feb40°F	
														Recond. 65°F
		-----cwt/acre-----		----- % -----			----- % -----							
Chipeta	398	362	91	31	60	6	3	1.090	3	3.0	2.3	3.7	1.1	3.3
Gemchip	416	370	89	12	77	11	0	1.085	21	4.1	2.2	3.2	1.2	3.5
A8961-14	419	390	93	29	64	6	0	1.088	3	1.8	2.7	3.8	1.6	3.8
NDA2031-2	404	279	69	2	67	30	0	1.087	20	1.6	1.2	1.9	1.0	3.0
A87109-10	396	345	87	9	78	12	1	1.096	0	2.6	1.0	2.7	1.1	3.8
A88356-1	368	328	89	22	67	7	4	1.100	5	2.7	2.3	4.6	1.0	4.0
A88432-5	349	318	91	25	66	9	1	1.100	40	1.8	2.7	2.0	1.2	3.8
A80559-3	339	302	89	19	70	10	1	1.108	5	3.7	1.7	3.0	1.0	3.8
A88431-1	338	281	83	12	71	16	0	1.103	0	2.8	1.3	2.6	1.0	3.3
NDO1496-1	338	247	73	3	70	27	0	1.095	0	3.3	1.0	2.1	1.1	3.0
Mean	376	320	85	17	69	13	1	1.095	6	2.7	1.8	2.9	1.1	3.5
LSD (.05)	27							0.005		0.6	0.7	0.4	0.2	0.9

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ Chip color rated using the SFA color chart, 0-5 scale with 2 or less considered acceptable. Tubers stored at 40°F or 45°F. Tubers held at 40°F were also reconditioned for 3 weeks at 65°F.⁴ Merit score is similar to a breeders' preference rating and is based on appearance and size of field-run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 6. Idaho location of the Tri-state (Idaho, Oregon, Washington) russet potato variety trial grown at Aberdeen, Idaho in 1995.

Clone	Total Yield	U.S. No. 1's				Culls and		Specific Gravity	Hollow ¹ Heart	Blackspot ²		Shatter ² Bruise	Fry Color ³	
		Yield	%	>12 oz	6 to 12 oz	U.S. No. 2's				Bruise	Bruise		40°F	45°F
						<4 oz	Malformed							
	-----cwt/acre-----													

¹ Hollow heart was measured by cutting tubers > 12 oz.

² 1-5 scale with 1 = resistant, 5 = susceptible.

³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 7. Idaho location of the Western Regional chipping potato trial grown at Aberdeen, Idaho in 1995.

Clone	Total Yield	U.S. No. 1's		Culls and		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Shatter ² Bruise	Chip Color ³		
		Yield	%	> 12 oz	U.S. No. 2's					40°F	50°F Recond.	
					< 4 oz							Malformed
-----cwt/acre-----												
----- % -----												
----- % -----												
----- % -----												
----- % -----												
Atlantic	392	296	76	10	45	20	4					
Chipeta	459	396	86	35	42	8	6					
ATX85404-8	485	317	65	7	39	33	2					
NDA2031-2	484	354	73	8	44	25	2					
NDO1496-1	423	301	71	5	39	28	1					
BCO894-1	324	232	72	2	40	26	2					
Mean	428	316	74	11	42	23	3					
LSD (.05)	81	107										
								2.5	3.2	2.3	2.0	
								1.0	0.6	0.5	0.4	
											0.7	

IDAHO TABLE 8. Russet and processing potato advanced clone trial grown at Parma, Idaho in 1995.

Clone	Total Yield	U.S. No. 1's		Culls & U.S. No. 2's		Specific Gravity	Hollow ¹ Heart	Fry ² Color	Sugar ³ Ends
		Yield	%	> 12 oz	< 4 oz				
	-----cwt/acre-----			----- % -----			-%-		-%-
Russet Burbank	447	248	55	17	11	1.089	20	1.9	74
Ranger Russet	454	360	79	26	7	1.095	0	2.0	64
Shepody	412	320	78	34	5	1.084	5	3.4	53
AO82611-7	468	377	81	10	14	1.091	0	1.5	13
A84180-8	446	387	87	35	4	1.084	18	3.0	34
COO83008-1	403	352	87	51	4	1.091	15	1.1	23
A81386-1	399	342	86	24	8	1.080	3	1.4	57
A84118-3	393	336	85	16	12	1.102	10	1.4	47
A81473-2	375	327	87	38	7	1.096	25	2.2	35
A8495-1	346	317	92	25	8	1.098	3	1.6	27
Mean	414	337	82	28	8	1.091	10	2.0	43
LSD (.05)	54	43				0.005		0.5	24

¹ Hollow heart was measured by cutting tubers > 12 oz.² USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.³ Percent of tubers producing fries with ends rated 3+ and at least 1 full point darker than the remainder of the fry.

IDAHO TABLE 9. Potato advanced clone trial grown at Raft River, Idaho in 1995.

Clone	Total Yield	Yield	U.S. No. 1's		Culls and		Specific Gravity	Hollow ¹ Heart --%--	Blackspot ² Bruise	Fry Color ³		
			%	>12 oz	6 to 12 oz	U.S. No. 2's				40°F	45°F	
						<4 oz						Malformed
-----cwt/acre-----												
<u>Long Russets</u>												
Russet Burbank	322	221	69	9	43	17	15	1.077	5	2.3	3.8	2.4
Ranger Russet	397	318	80	29	37	8	12	1.079	0	3.1	3.6	2.4
Russet Nugget	256	168	66	4	37	34	0	1.080	0	1.5	3.9	2.7
A8495-1	511	436	85	19	50	12	3	1.081	0	1.6	3.0	1.4
A86102-6	432	388	78	10	47	18	4	1.078	0	1.2	4.0	2.5
A8792-1	401	327	82	18	44	13	5	1.082	0	1.3	3.8	2.0
A84118-3	398	312	78	9	40	20	1	1.082	2	1.1	3.8	2.1
A82611-7	392	317	81	19	45	11	8	1.078	0	2.0	3.6	2.6
COO83008-1	351	295	84	18	47	14	3	1.081	2	1.5	3.9	2.3
A81473-2	323	284	88	24	49	11	1	1.076	0	1.5	3.4	2.1
AC83064-6	282	252	89	30	47	10	1	1.072	0	2.7	3.6	1.3
<u>Chippers</u>												
Chipeta	372	340	91	28	53	7	2	1.081	2	1.5	2.5	1.1
Snowden	290	194	67	4	35	30	3	1.084	0	2.2	2.0	0.6
A80559-2	399	341	85	17	51	12	2	1.088	7	1.4	1.8	0.8
NDO1496-1	363	302	83	12	49	17	0	1.084	0	1.6	1.4	0.5
Mean	362	292	80	16	45	16	4	1.080	1	1.7	3.2	1.8
LSD (.05)	79	70						0.003		0.2	0.4	0.3

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 10. Sensory evaluations of baked potatoes made from tubers grown at Aberdeen, Idaho in 1995.¹

Clone	At harvest			After 5 Months Storage (40°F)				
	Color	Texture	Flavor	Overall	Color	Texture	Flavor	Overall
Russet Burbank	6.5 c	6.0 b	5.9 c	5.9 c	6.6 e	6.2 d	5.8 c	6.0 bc
COO83008-1	6.8 ab	6.5 a	6.6 a	6.6 a	6.6 de	6.5 bc	6.2 b	6.3 b
A8495-1	6.8 ab	6.1 b	6.3 ab	6.2 b	6.8 bcd	6.5 b	6.6 a	6.6 a
A81386-1	6.7 bc	6.1 b	6.3 b	6.2 b	6.6 cde	6.2 cd	6.1 b	6.3 b
A84118-3	6.9 a	5.9 b	6.0 bc	6.1 bc	6.9 ab	6.1 d	5.9 bc	6.0 bc
A86102-6	6.9 a	6.0 b	5.9 c	6.0 bc	7.1 a	6.0 d	5.7 c	5.8 c

¹ Evaluations were made by trained panelists using double blind procedures. Approximately 100 tests were done on each clone. Each baked potato was rated for color, texture, flavor, and overall appeal. Ratings were made using a 1-9 scale with 9 = best. Means were separated using Duncan's Multiple Range Test, and means followed by the same letter are not significantly different.

IDAHO TABLE 11. Reaction of potato clones to the herbicide metribuzin (Sencor/Lexone).¹

Clone	Plant Injury ² 21 Days Following Application	Predicted ³ Yield Reduction Due to Injury ²	Relative ⁴ Susceptibility to Injury
----- % -----			
<u>Russet and Long Whites</u>			
Russet Burbank	0	0	VR
Russet Norkotah	0	0	VR
Shepody	80	55	VS
A81386-1	3	0	VR
A81480-6	0	0	VR
A82360-7	3	0	VR
A83115-12	8	0	VR
A8495-1	0	0	VR
A84118-3	0	0	VR
A84180-8	0	0	VR
A84420-5	25	6	MR
A86102-6	3	0	VR
A8787-2	0	0	VR
A8792-1	0	0	VR
AC83064-1	8	0	VR
AC83064-6	28	9	MR
AC84487-1	5	0	VR
AO80432-1	25	7	MR
AO85165-1	0	0	VR
ATX84706-2Russ	0	0	VR
CO84074-2	3	0	VR
CO85026-4	0	0	VR
TXAV657-27Russ	0	0	VR
TX1229-2Russ	0	0	VR
W1099	73	48	VS
<u>Chipping Selections</u>			
Gemchip	5	0	VR
ATX85404-8	70	46	VS
BCO894-2	18	3	R
<u>Reds</u>			
NorDonna	40	20	MS
A82705-1R	25	5	R
AD82705-1R	13	0	VR
AD82706-2	33	16	MS
CO86142-3	40	19	MS
CO86218-2	25	11	MS
COO86107-1R	55	31	S
COTX86146-2R	73	55	VS
NDO2438-6R	5	0	VR
NDO2438-7R	25	7	MR
NDO2469-1R	25	8	MR
NDO2686-6R	60	34	S

¹ Metribuzin applied postemergence (8-12 inch plants) at a rate of 1.0 lb a.i./A (17.5 gpa, 30 psi).² Plant injury was recorded as the percentage of foliage from an average plant in each plot that showed typical metribuzin symptoms (chlorosis, necrosis, vein clearing, etc.)³ Predicted yield reduction is expressed as percent loss compared to untreated plots and was calculated using the following equation: Yield reduction = $[1 - (1.142 + 0.176 (\text{Log} (\text{plant height treated} / \text{plant height untreated})) - 0.00796 (\text{plant injury}))] \times 100$.⁴ VR = very resistant, R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible

Idaho Table 12. Late blight screening trial conducted at Corvallis, Oregon in 1995.

Entry	Area Under ¹ Disease Progress Curve	Entry	Area Under Disease Progress Curve
A85SPX15-2	1401	A86SPX6-1	1215
A85530-10	1381	87TR2275-9	1211
A90SPX10-6	1358	ZC109-5	1208
Calwhite	1347	AWN86524-4	1208
Russet Burbank	1340	NZA8905-2	1204
WA911051-1LS	1325	A88597-7	1200
NZA8903-3	1318	Krantz	1200
PK89A67-1	1296	Elba	1198
Sebago	1293	KSA195-78	1198
A85536-1	1291	AO80432-1	1198
Primicia Inta	1287	NZA8907-4	1187
A88616-17	1283	B71.240.2	1185
A90SPX3-3	1282	Pirola	1182
Rosa	1281	Brador	1177
A90SPX5-3	1279	A91916-1	1177
TXA1644-1	1278	NZA8904-2	1176
A81386-1	1267	AWN85542-9	1176
A86102-6	1264	WN726-3	1175
NZA8902-5	1264	A8836-5	1174
PK89A65-2	1264	AWN85540-1	1165
COO83090-1	1262	Serrana	1163
Chipeta	1260	PG127-1	1162
76DS-2	1257	Granola	1160
Bona	1251	PA89A3-4	1160
COO83008-1	1249	Cisa	1154
A85103-3	1239	A88617-6	1151
Ranger Russet	1238	A82580-1	1151
A84180-8	1237	AWN85510-2	1151
A84430-5	1235	Kennebec	1148
A8495-1	1235	A88616-4	1148
NDA1725-1	1233	A8935-3	1145
AWN85531-7	1233	A90541-12	1137
A85542-9	1232	Alpha	1136
NDA2031-2	1230	HM84551349-1	1136
A90550-3	1228	A90588-5	1125
Patrones	1228	Ozette	1125
AWN8048-3	1224	KSA196-24	1124
PK89A66-1	1221	AWN85542-1	1122
87TR2246-1	1220	V2	1097
A90586-4	1219	Mila	1048
A90540-21	1219	Pilica	1042
A85SPX25-2	1218	A87SPX2-1	1042
WN5	1217	79V100-40	1030
87TR2210-1	1216	A88625-10	1025

Idaho Table 12 (continued).

Entry	Area Under Disease Progress Curve	Notes about Resistant Clones
Stobrawa	983	late maturity
GL78/85	955	resprouting at base
AWN86524-2	942	late maturity
KSA195-90	854	partially green Oct 6; restricted lesions
A90587-5	831	mostly green Oct 6; late maturity; restricted lesions
Bzura	718	partially green Oct 6; late maturity
Brodict	572	restricted lesions
AWN86524-5	356	100% green Oct 6; late maturity, restricted lesions
AWN86514-2	206	100% green Oct 6; late maturity, restricted lesions
G6582-3	202	100% green Oct 6; late maturity, restricted lesions
A90586-11	202	100% green Oct 6; late maturity, restricted lesions

¹AUDPC from Sept 7; 14; 22; *P infestans* strains US1-A1 and US8-A2.

Idaho Table 13. Late blight screening trial conducted at Mt. Vernon, Washington in 1995.

Entry	Area Under ¹ Disease Progress Curve	% By Weight Blighted Tubers
TXAV657-27Ru	1413	18.5
W1099	1413	21.0
CO84074-2	1413	6.0
AC84487-1	1413	7.4
ND1871-3R	1377	8.8
ATX84706-2R	1377	28.1
TX1229-2	1377	45.4
Russet Norkotah	1377	30.7
NDO1496-1	1340	49.4
NDO2438-7R	1328	2.3
Shepody	1303	19
BCO894-2	1303	4.0
AO82611-7	1292	0.8
A7961-1	1267	1.3
A86102-6	1255	33
Russet Burbank	1243	1.3
CO85026-4	1218	0.9
AO85165-1	1218	15.4
AO8478-1	1218	2.2
NDA2031-2	1207	34.9
Calwhite	1207	8.1
ATX85404-8	1193	4.7
A84420-5	1182	3.9
AC83604-6	1170	2.2
A80559-1	1158	2.3
A81386-1	1133	16.3
A84180-8	1120	2.9
Ranger Russet	1108	22.8
A8495-1	1085	5.6
AC83604-1	1085	1.3
Brador	1050	9.4
A81473-2	1037	4.9
Granola	1025	0.1
A81480-6	1000	2.7
Kennebec	1000	7.1
AO80432-1	975	0.7
Achirana	940	0.4
AO84275-3	940	0.0
A83115-12	928	0.6
COO83008-1	915	2.7
A8792-1	903	1.3
A84118-3	890	0.3
AWN85510-2	783	2.3
AWN85540-1	753	1.3

Idaho Table 13 continued

Entry	Area Under ¹ Disease Progress Curve	% By Weight Blighted Tubers
Ozette	580	0.3
AWN85542-1	457	0.6
Bzura	304	0.0
AWN86514-2	64	0.1
LSD	266	8.3%

¹US11-A1 Strain

Maine

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Introduction: Fifty potato varieties and clones were tested at Aroostook Farm, Presque Isle, Maine, as part of the NE107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast). The primary objective of this trial is to determine performance, quality, and storage characteristics of promising potato clones and new varieties in Maine.

Methods: Single-row plots, 25 feet long, were hand planted on May 12 (late and russet trials) and May 17 (early and mid-season trials), 1995, using a randomized complete block design and four replications. The seedpiece spacing used for each line is listed in subsequent tables. Plots were located on a site mapped as having the Caribou loam soil that is typical of the area. Soil nutrient levels were high and the soil pH ranged from 6.0 to 6.5 for the five individual maturity class trials. The previous crop for the site was spring barley and during 1993 the site had been cropped to potatoes. The entire site received a broadcast application of 200 lbs/A muriate of potash (0-0-60) prior to spring tillage. All varieties were fertilized with 1120 lbs/A of 14-14-14, banded at planting. The late and russeted variety experiments received an additional 50 lbs/A of nitrogen, sidedressed on June 27. Metribuzin (0.38 lbs ai/A) was applied on June 6 for weed control. Sethoxydim (0.28 lbs ai/A) and crop oil (2 pts/A) were applied on June 20 to provide additional grass control. Cultural practices were similar to those used on commercial farms in the area and varieties were grouped so that separate tests could be vinekilled and harvested based on maturity classification. Specific gravity was determined at harvest using the weight-in-air/weight-in-water method. Hollow heart ratings indicate the number of hollow tubers observed per 40 large tubers examined. Chip color evaluations were conducted from December 4-7, 1995, following storage at 50°F. Chips were fried at 350°F for three minutes and evaluated using an Agtron M35, calibrated with the black "0" disk = 0 and the white "90" disk = 90. Chips were crushed and reported values are means from four replicates per variety. Each sample was read three times with thorough mixing between readings.

Results:

General Growth and Plant Stands. All varieties produced greater than 90% stands in these studies, except for B0585-5 (88%) and AF1426-1 (71%). The weather was warm and dry during May and June. With the exception of AF1426-1, all lines emerged quite quickly. Visual ratings indicated that Atlantic, Century Russet, Mainestay, Russet Burbank, Superior, AF875-

15, AF1470-17, AF1455-9, AF1470-18, AF1565-12, ND2417-6, and W1099Rus emerged and developed exceptionally fast. Moderate chlorosis, apparently from the metribuzin application, was noted on June 14 on AF1379-3, and W1099Rus. Twelve other lines displayed slight foliar chlorosis.

Rainfall for May, June, July, and August totaled 2.30, 1.53, 2.42, and 2.40 inches, respectively. This gives a June 1 through August 31 total of 6.35 inches compared to the 30-year average of 11.3 inches. Plant growth occurred slowly as a result of the low rainfall; however, only AF1424-7 and AF1452-28 produced exceptionally small plants with very poor ground cover. Plants of Krantz, MaineChip, AF1379-3, AF1425-1, AF1426-1, AF1452-28, and B0564-9 were also smaller than average. Yields were lower than usual for most lines during 1995 because of low rainfall throughout the season. Early dying was the only foliar disease observed during 1995. Early dying was rated moderately severe for Cherry Red, Dark Red Norland, Superior, AF1379-3, AF1425-1, AF1438-4, AF1438-6, B0564-8, B0585-5, and ND2471-8. Slight early dying symptoms were observed in Goldrush, Mainestay, Monona, AF1424-6, AF1424-7, AF1438-5, ND1871-3R, ND2417-6.

Early Maturity Trial. AF1331-2 and AF1438-6 were significantly higher yielding than Superior in the early maturity test (Maine Table 1). Marketable yields of AF1331-2 were also significantly higher than those of Superior. Only AF1331-2 and AF1438-6 compared favorably with Superior in marketable yields in this test. Tuber size was quite small for most lines, particularly AF1424-7, AF1438-4, AF1438-5, and AF1565-12. Only AF1331-2 and AF1424-6 sized reasonably well for table use. There were few external defect problems in this test and no hollow heart was detected (Maine Table 2). AF1424-6 and AF1438-6 had 2.4% growth cracks. More than 3% rot was detected at grading in AF1438-6 and AF1565-12. In addition, some tubers of AF1565-12 were sprouted at the time of grading during October. Superior and Monona were the most uniform in appearance and most attractive. AF1331-2 and AF1424-6 displayed a lot of skinning at harvest. Chip colors from December storage were quite good for Monona, AF1424-6, and AF1424-7. Specific gravities were quite high for all lines except Monona, but were highest for AF1424-6, AF1424-7, and AF1565-12. Vine maturity ratings of AF1331-2, AF1424-6 and AF1438-5 reflected mid-season rather than early maturity.

Medium Maturity Chipping Trial. Only AF875-15 produced total and marketable yields that were

significantly higher than Kennebec and Atlantic (Maine Table 3). AF1433-4, B0257-12, ND2417-6, and NY87 were also relatively high yielding in this test. Yields of MaineChip, Snowden, AF1452-28, B0564-8, B0564-9, and W870 were significantly lower than both standards. Kennebec, AF875-15, AF1433-4, AF1452-28, B0257-12, and B0585-5 sized well for table use. Tuber size of Snowden, B0564-8, and ND2417-6 was exceptionally small. Few external defects were observed in this experiment and no hollow heart was detected (Maine Table 4). ND2417-6 had a high incidence of misshapen tubers. AF1433-4, AF1452-28, B0257-12, and NY87 were given good tuber appearance ratings. Tubers of Snowden, B0564-8, and ND2417-6 were rated particularly unattractive. ND2417-6 produced many pear-shaped tubers.

Considering agtron scores and visual ratings, the best chips were produced by MaineChip, AF1452-28, NY87, and W870. All lines produced chips with acceptable agtron scores except for Kennebec and ND2471-8. Specific gravities of all lines were greater than 1.085 except for those of Kennebec, AF1433-4, AF1452-28, and NY87. Specific gravities of MaineChip and ND2471-8 exceeded those of Atlantic. Based on yields, tuber size and appearance, chip color, and specific gravity, the best chipping prospects in this test were B0257-12, B0585-5, and NY87.

Medium Maturity Tablestock Trial. Only Chieftain and AF1470-17 produced total and marketable yields which were statistically greater than those of Kennebec in this test (Maine Table 5). Yields of Cherry Red, Red Ruby, AF1379-3, AF1425-1, AF1426-1, and ND1871-3R were significantly lower than Kennebec. All of the reds produced relatively small tubers in this test. Chieftain had the largest tubers of the red lines. AF1426-1, AF1470-17, and AF1475-16 sized reasonably for tablestock use. Only Kennebec and AF1426-1 had considerably more than 5% external tuber defects in this trial (Maine Table 6). Both lines had a high incidence of misshapen tubers. No hollow heart was detected in this experiment. Tuber appearance ratings were quite good for Cherry Red, Chieftain, and Dark Red Norland; however, tubers of Chieftain were an undesirable pale red. AF1470-17 was the most promising tablestock line in this test; however, tuber size distribution and appearance were not outstanding. Dark Red Norland was the best of the reds.

Atlantic, AF1425-1, AF1426-1, AF1470-18, and AF1475-16 produced light-colored chip colors from December storage, although dark vascular rings were sometimes present in the chips of all but AF1470-18. Specific gravities were especially high for Atlantic, Cherry Red, AF1379-3, AF1425-1, and AF1475-16.

Late Maturity Trial. Mainstay and St. Johns produced total and marketable yields which were significantly higher than those of Katahdin in this test (Maine Table 5). Chipeta was also relatively high yielding. Only AF1455-9 did not size well for tablestock use in this group. Chipeta, Katahdin, and St. Johns had relatively high sunburn incidence, otherwise few external tuber defects were observed in this trial (Maine Table 6). No hollow heart was detected. Tuber appearance ratings for Chipeta, Katahdin, Mainstay, Morene, and St. Johns were favorable, while AF1455-9 was given poor ratings due small size and the presence of pointed tubers. Chipeta had extremely late vine maturity. St. Johns and Mainstay were the two outstanding lines in this test.

None of these lines produced acceptable chip colors from December storage. Specific gravity of Chipeta was significantly lower than that of Katahdin, while Mainstay and AF1455-9 had significantly higher specific gravity.

Russet-Processing Trial. None of the test lines produced higher total yields than Russet Burbank in this test; however, total yields of Century Russet, Goldrush, B0493-8, and W1099Rus were statistically equal to those of Russet Burbank (Maine Table 1). Krantz, AF1481-4, and B9922-11 produced significantly lower total yields. Marketable yields of large-sized tubers told a different story. Marketable yields of Century Russet, AF1481-4, B0493-8, B9922-11, and W1099Rus were significantly higher than Russet Burbank. Century Russet had the highest marketable yields in this test. Goldrush and Krantz sized poorly in this trial. Russet Burbank tubers were the most elongated in shape (Maine Table 2). Century Russet also produced elongated tubers, while most tubers of the remaining lines were quite round. Incidence of external defects was quite high for Russet Burbank and B0493-8. These defects consisted mostly of misshapen tubers and Russet Burbank was particularly high in severely misshapen tubers (data not shown, 5.6% vs. 1.2% for B0493-8, the next highest line). No hollow heart was detected in this trial. Tubers of Krantz were white-skinned, while all other lines were russeted. Russet Burbank, Century Russet, and AF1481-4 displayed relatively light russetting and that of Russet Burbank was very nonuniform. Tubers of B9922-11 were rated particularly attractive. Century Russet, Russet Burbank, and B9922-11 were very late maturing. Century Russet displayed essentially no indication of senescence at the time of vinekill.

Russet Burbank, Century Russet, B0493-8, and W1099Rus had specific gravities below 1.080. Fry colors from December storage were particularly good for Krantz and particularly poor for Century Russet and B0493-8. None of the russeted/processing types stood out from the pack in all characteristics during 1995.

Century Russet and B0493-8 were high in total yields; however, their tuber appearance ratings were quite poor and Century Russet is extremely late in vine type. B9922-11 remains the most solid, dual-purpose performer with good tuber appearance; however, total yields have not been outstanding in recent trials and tubers were not well elongated during 1995.

Storage Evaluations. Limited data on storage and processing characteristics were collected from 53 varieties and clones grown during the 1994 growing season (Maine Table 7). French fry texture and processing data were not available for this report. Chip colors from 50°F storage in February were acceptable for many lines with anticipated chipping potential. Lines with outstanding chip color from 50°F February storage were: AF1424-6, AF1424-7, and AF1426-1 (early test); Kennebec, Spartan Pearl, AF1438-1, B0172-22, B0245-15, B0564-9, NC012-18, ND2417-6, ND2471-8, NYE55-44 and W870 (medium trial); Monona, AF1452-28, and NYE55-35 (late trial). MaineChip, Monona, AF1424-6, AF1424-7, AF1438-1, AF1452-28, B0613-2, B0172-22, B0245-15, B0564-8, B0564-9, B0585-5, B0635-6, NC012-18, ND2417-6, NYE55-35, NYE55-44, NY87, and W870 also produced acceptable chips directly from 45°F storage. Only MaineChip and B0245-15 produced acceptable chips directly out of 38°F storage; however, Kennebec, Monona, AF1424-6, AF1424-7, AF1433-4, AF1452-28, B0172-22, B0245-15, B0585-5, NYE55-35, NYE55-44, NY87, W870, and W1099Rus reconditioned well from 38°F storage.

After-cooking darkening scores were not available for this report. Washed appearance ratings were particularly outstanding for Katahdin, Kennebec, Spartan Pearl, Superior, Yukon Gold, AF1331-2, B0585-5, B9922-11, ND2471-8, and NYE55-44. The following lines had very high levels of silver scurf on their tubers: Atlantic, Goldrush, Katahdin, Kennebec, Norchip, MaineChip, Monona, St. Johns, AF875-15, AF1424-6, AF1424-7, AF1425-1, AF1433-4, AF1438-1, AF1438-5, AF1438-6, AF1452-28, B0172-22, B0245-15, B0405-4, B0564-8, B0564-9, NC012-18, ND2471-8, NYE55-35, NYE55-44, and NY87. Black scurf incidence was high on tubers of Castile, Chipeta, Goldrush, Kennebec, Mainestay, Russet Burbank, Snowden, Superior, AF1438-6, AF1452-28, B0493-8, and B9922-11. Russet scab was a serious skin defect for Castile, Chipeta, Katahdin, Kennebec, AF1331-2, AF1426-1, AF1438-4, B0613-2, B0172-22, B0245-15, B0257-12, B0564-9, ND2417-6, and NYE55-44. Black dot was prevalent on the skin of Katahdin, Mainestay, Monona, St. Johns, AF1331-2, AF1438-1, AF1438-4, and B0405-4.

Tuber dormancy was exceptionally short and early sprout growth was rapid for Mainestay, St. Johns,

B0257-12, B0405-4, B0613-2, B0635-6, NC012-18, and ND2417-6. Within their maturity groupings, Kennebec, Russet Burbank, Spartan Pearl, AF1426-1, B0245-15, and MN12823 had particularly long dormancy. Kennebec, Russet Burbank, Spartan Pearl, Yukon Gold, AF1426-1, AF1438-1, and B0245-15 required more than 170 days to reach the one-half-inch sprout stage. Selections with very low weight loss (3.0% or less) from 38°F storage were AF1425-1, AF1426-1, AF1433-4, AF1438-6, and NYE55-44. Selections with very low weight loss (approximately 10% or less) from 50°F storage were Kennebec, Russet Burbank, Yukon Gold, AF1426-1, and B0245-15. Mainestay, Snowden, AF875-15, AF1424-7, AF1438-5, AF1481-4, B0257-12, B0405-4, B0493-8, B0564-8, B0585-5, B0635-6, NC012-18, and W1099Rus had relatively high weight loss at 50°F.

Overall Summary. Selections that performed particularly well in the 1995 Aroostook Farm NE107 trials were AF1331-2 (early tablestock round-white); AF1470-17 (mid-season, tablestock round-white); B0257-12, B0585-5, and NY87 (mid-season chipstock and table lines); Mainestay and St. Johns, (late season, tablestock round-whites). None of the russet or processing lines provided outstanding characteristics for either french fry utilization or the table russet market. B9922-11 came the closest of the group, but many of its tubers tended to be round or only slightly oblong.

AF875-15 potentially fills a niche as an out-of-field chipper with resistance to hollow heart and internal necrosis. Tubers of AF875-15 tend to be small and unattractive. It does not chip particularly well from storage. AF1426-1 is an interesting mid-season selection in that it has produced fair yields of large-sized, oblong tubers, with very good chip color. Its tubers have very long tuber dormancy and low storage weight loss. It tends to emerge slowly in the spring. It might be worth exploring its potential for french fry processing, particularly with seed warming and spacing manipulations to increase its tuber size.

Table 1. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for nine early maturing and ten russeted/processing varieties grown at Presque Isle, Maine - 1995.

Variety	Total Yield cwt/A	Mkt. Yield ¹ cwt/A	% of std.	Stand (spacing) ²	% Stand	50% Emerg. Date	Size Distribution by Class ³ (%)										Spec. Grav.
							1	2	3	4	5	6	1-7/8 to 4"	2-1/4 to 4"	2-1/2 to 4"		
Early Test- 101 days																	
Superior (std)	200	191	100	100(10)	6-10	4	17	33	46	1	0	96	79	47	1.086		
Monona	165	158	83	100(10)	6-16	4	23	38	34	1	0	96	72	34	1.077		
AF1331-2	246	233	122	99(10)	6-12	3	16	31	47	4	0	97	82	51	1.086		
AF1424-6	168	153	80	94(10)	6-17	2	7	19	61	11	1	97	90	71	1.093		
AF1424-7	178	163	85	98(10)	6-16	8	39	41	12	0	0	92	53	12	1.097		
AF1438-4	197	167	87	100(10)	6-15	15	46	34	5	0	0	85	40	5	1.085		
AF1438-5	212	159	83	97(10)	6-14	24	61	14	1	0	0	76	15	1	1.081		
AF1438-6	238	214	112	97(10)	6-14	4	20	39	34	3	0	96	76	37	1.080		
AF1565-12	188	151	79	99(10)	6-11	15	52	29	4	0	0	85	33	4	1.090		
W.Duncan LSD	31	34										4	7	5	0.003		
Russet/Processing Test - 119 days																	
R. Burbank (std)	269	155	100	100(16)	6-8	18	51	26	4	2		77	32	5	1.072		
Century Russet	281	220	142	100(16)	6-8	14	51	27	5	2		78	35	8	1.071		
Goldrush	252	168	108	100(16)	6-11	30	58	12	1	0		70	13	1	1.082		
Krantz	231	163	105	97(12)	6-10	26	53	18	3	0		71	21	3	1.086		
AF1481-4	224	193	124	94(16)	6-10	11	57	26	6	0		83	32	6	1.085		
B0493-8	270	191	123	100(16)	6-12	13	50	28	6	2		78	37	9	1.076		
B9922-11	244	197	127	100(16)	6-13	11	52	27	7	2		79	37	9	1.080		
W1099Rus	253	193	124	93(16)	6-8	15	48	24	6	8		72	38	14	1.076		
W.Duncan LSD	22	21											11	7	0.003		

¹Marketable yield of early varieties = yield 1-7/8 to 4" excluding external defects. Marketable yield of russet/processing varieties = yield > 4 oz. excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes for early varieties: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4"; 6=over 4". Size classes for russeted/processing varieties: 1= <4 oz; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz.

Maine Table 2. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip colors for nine early maturing and ten russeted/processing varieties grown at Presque Isle, Maine - 1995.

Variety	Plant Data ¹		Tuber Data ¹		Tuber Defects (%)				Hollow Heart Rating ²		Chip Color ³		
	Size 8-10	Vine Matur. at 8-24	Vinekill	Texture	Shape	Appear-ance	Total	Sun- burn	Mis- shapen	Growth cracks		Rot	
Early Test- 101 days													
Superior (std)	8	4	4	6	2	8	1.0	0.0	0.5	0.0	0.5	0	54nu
Monona	5	6	6	7	2	7	0.7	0.0	0.7	0.0	0.0	0	63
AF1331-2	8	7	7	6	2	5	2.9	0.4	0.0	0.3	2.2	0	46nu
AF1424-6	6	6	6	7	4	4	6.4	0.0	1.7	2.4	2.3	0	63
AF1424-7	3	4	5	6	1	4	0.9	0.1	0.0	0.0	0.8	0	62
AF1438-4	6	4	4	5	2	4	1.0	0.1	0.0	0.5	0.4	0	58dr
AF1438-5	7	6	6	5	1	3	0.6	0.0	0.3	0.2	0.2	0	54nu
AF1438-6	7	4	5	5	1	6	7.1	0.5	0.0	2.4	4.1	0	43
AF1565-12	5	2	3	6	1	5	5.6	0.1	0.2	0.0	5.3	0	60dr
Russet/Processing Test - 119 days													
9-7													
R. Burbank (std)	8	8	8	4nr	7	3	30.0	0.3	29.5	0.2	0.0	0	38
Century Russet	7	9	9	4	6	4	8.6	1.6	7.0	0.0	0.0	0	30
Goldrush	6	5	6	3	4	5	5.4	0.0	5.2	0.2	0.0	0	35
Krantz	4	6	6	5	2	3	4.6	0.4	4.2	0.0	0.0	0	50
AF1481-4	5	7	7	4	3	3	3.0	0.5	1.9	0.6	0.0	0	40
B0493-8	7	7	7	3	4	3	18.4	0.8	16.1	0.0	1.5	0	29
B9922-11	8	7	8	3	4	6	8.9	2.3	5.6	0.9	0.2	0	42
W1099Rus	6	6	6	3	4	4	10.3	1.0	7.7	1.6	0.0	0	42

¹See standard NE107 rating system for key to codes; nr = indicates non-uniform russetting

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agtron M35 (higher values indicate lighter color): >60 acceptable; nu = non-uniform color; dr = dark vascular ring; ds = dark stem end. Waller Duncan LSD (K=100) for chip color = 4 (early test) and 4 (russet/processing test).

Maine Table 3. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 15 medium maturing, chipping varieties grown at Presque Isle, Maine - 1995.

Variety	Total Yield cwt/A	Mkt. Yield ¹ cwt/A	% of std.	Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Spec. Grav.
						1	2	3	4	5	6	1-7/8 to 4"	2-1/4 to 4"	2-1/2 to 4"		
<u>Medium Test- 111 days</u>																
Kennebec (std)	231	220	100	100 (8)	6-14	3	9	33	49	6	0	97	88	55	1.077	
Atlantic	233	222	101	100(10)	6-12	3	24	44	27	2	0	97	73	29	1.090	
MaineChif	206	197	90	100(10)	6-14	2	21	41	35	0	0	98	76	35	1.096	
Snowden	203	190	86	100(14)	6-16	6	42	37	15	0	0	94	52	15	1.088	
AF875-15	257	245	111	100(10)	6-10	2	9	36	51	2	0	98	89	53	1.086	
AF1433-4	235	223	101	99(10)	6-14	3	18	26	46	6	0	97	79	53	1.075	
AF1452-28	175	170	77	94(10)	6-17	2	10	28	57	3	0	98	88	60	1.079	
B0257-12	243	233	106	100(10)	6-11	2	14	32	50	1	0	98	84	51	1.090	
B0564-8	207	184	84	100(10)	6-14	11	46	36	7	0	0	89	43	7	1.089	
B0564-9	195	182	83	100(10)	6-14	6	27	46	21	0	0	94	67	21	1.087	
B0585-5	219	214	97	88 (8)	6-15	2	9	27	55	7	0	98	90	63	1.089	
ND2417-6	240	203	92	100(10)	6-11	9	37	39	15	0	0	91	54	15	1.085	
ND2471-8	212	202	92	99(10)	6-14	4	21	40	35	0	0	96	75	35	1.098	
NY87	240	229	104	99(10)	6-13	4	19	34	35	8	0	96	77	43	1.080	
W870	210	197	90	99(10)	6-16	4	20	43	33	0	0	96	76	33	1.092	
Waller Duncan																
LSD (k=100)	20	20					2		7					9	0.003	

¹Marketable yield = yield 1-7/8 to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4"; 6=over 4".

Table 4. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 15 medium maturing, chipping varieties grown at Presque Isle, Maine - 1995.

Variety	Plant Data ¹			Tuber Data ¹			Tuber Defects (%)					Hollow Heart Rating ²		Chip Color ³
	Size 8-10	Vine Matur. at 8-24	Vinekill ture	Skin Tex-	Shape	Appear-ance	Total	Sun- burn	Mis- shapen	Growth cracks	Rot			
<u>Medium Test- 111 days</u>														
Kennebec (std)	9	8	6	8	4	6	2.2	0.2	1.5	0.6	0.0	0	53dr	
Atlantic	5	6	6	5	1	7	1.7	0.6	0.5	0.3	0.3	0	61dr	
MaineChip	4	6	6	7	2	4	2.1	0.0	2.0	0.1	0.0	0	65	
Snowden	5	7	6	6	2	3	0.7	0.0	0.7	0.0	0.0	0	64	
AF875-15	7	5	4	7	2	5	3.5	1.1	2.2	0.2	0.0	0	61nu	
AF1433-4	7	7	6	7	3	6	2.4	0.5	1.9	0.0	0.0	0	62dr	
AF1452-28	3	6	5	7	2	6	1.2	0.0	0.9	0.3	0.0	0	65	
B0257-12	6	6	6	6	3	6	2.0	0.1	0.3	0.2	1.4	0	63	
B0564-8	7	6	5	6	2	3	0.2	0.2	0.0	0.0	0.0	0	65dr	
B0564-9	4	6	5	6	1	4	1.1	0.1	0.9	0.0	0.0	0	64dr	
B0585-5	5	6	5	7	2	4	0.6	0.1	0.3	0.2	0.0	0	66dr	
ND2417-6	8	6	5	7	3	2	7.1	0.4	6.7	0.0	0.0	0	66dr	
ND2471-8	7	5	4	8	1	5	1.1	0.0	0.0	0.0	1.1	0	58nu	
NY87	6	6	6	7	2	6	0.7	0.2	0.5	0.0	0.0	0	67	
W870	5	5	5	7	2	5	2.8	0.2	2.6	0.0	0.0	0	67	

¹See standard NE107 rating system for key to codes.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agtron M35 (higher values indicate lighter color): >60 acceptable; nu = non-uniform color; dr = dark vascular ring; ds = dark stem end. Waller Duncan LSD (K=100) for chip color = 3.

Maine Table 5. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 13 medium maturing, table varieties and six late maturing varieties grown at Presque Isle, Maine - 1995.

Variety	Total Yield cwt/A	Mkt. Yield ¹ % of std.	Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)											Spec. Grav.
					1	2	3	4	5	6	1-7/8 to 4"			2-1/2 to 4"		
											2-1/4	2-1/4 to 4"	2-1/4 to 4"			
<u>Medium Test- 111 days</u>																
Kennebec (std)	253	222	100 (8)	6-14	2	7	21	62	8	0	98	92	71	1.077		
Atlantic	234	213	96 100(10)	6-12	4	25	47	23	1	0	96	71	24	1.094		
Cherry Red	197	179	81 98(10)	6-17	4	22	49	25	0	0	96	74	25	1.090		
Chieftain	278	263	118 100(10)	6-17	3	16	40	40	0	0	97	81	40	1.078		
Dark Red Norland	247	233	105 100(10)	6-12	2	22	44	31	0	0	98	76	31	1.076		
Red Ruby	214	190	86 98(10)	6-18	9	39	42	11	0	0	91	53	11	1.073		
AF1379-3	207	161	72 99(10)	6-12	21	56	22	2	0	0	79	24	2	1.092		
AF1425-1	223	198	89 100(10)	6-14	8	30	45	17	0	0	92	62	17	1.089		
AF1426-1	223	205	92 71(10)	6-26	1	3	21	58	17	0	99	96	75	1.081		
AF1470-17	302	285	128 98(10)	6-12	3	16	40	37	2	1	96	80	40	1.083		
AF1470-18	249	231	104 100(10)	6-12	7	35	39	19	0	0	93	58	19	1.082		
AF1475-16	246	235	106 94(8)	6-12	2	10	28	53	8	0	98	88	61	1.090		
ND1871-3R	215	190	86 98(10)	6-14	12	46	34	8	0	0	88	42	8	1.079		
W. Duncan LSD	23	23									2	6	7	0.004		
<u>Late Test - 119 days</u>																
Katahdin (std)	237	218	100 99(8)	6-11	3	12	28	52	5	0	97	85	58	1.073		
Chipeta	269	248	112 97(8)	6-11	2	9	18	57	14	0	98	89	71	1.070		
Mainestay	268	253	114 98(10)	6- 9	3	19	34	39	4	1	97	78	43	1.081		
St. Johns	303	274	123 96(8)	6-15	3	11	29	48	8	1	97	86	57	1.071		
AF1455-9	255	216	97 98(10)	6- 9	13	35	36	16	0	0	87	52	16	1.080		
W. Duncan LSD	28	33									2	5	7	0.003		

¹Marketable yield = yield 1-7/8 to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4";

6=over 4".

Maine Table 6. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip colors for 13 medium-maturing and six late-maturing tablestock varieties grown at Presque Isle, Maine - 1995.

Variety	Plant Data ¹			Tuber Data ¹			Tuber Defects (%)				Hollow Heart Rating ²		Chip Color ³
	Size 8-10	Vine Matur. at 8-24	Vinekill ture	Skin Texture	Shape	Appear-ance	Total	Sun-burn	Mis-shapen	cracks	Growth	Rot	
Medium Test- 111 days													
Kennebec (std)	8	6	8	4	7	11.0	1.8	8.0	1.3	0.0	0.0	0	58nu
Atlantic	5	5	5	1	7	5.1	1.7	2.7	0.7	0.0	0.0	0	65dr
Cherry Red	5	4	dk. red	6	7	5.2	0.0	3.6	1.6	0.0	0.0	0	57dr
Chieftain	6	7	6 pale rd.	6	6	2.3	0.0	1.3	0.5	0.5	0.5	0	42
Dark Red Norland	5	4	3 br. red	8	6	3.2	0.0	2.3	0.6	0.3	0.3	0	59dr
Red Ruby	6	7	7 dk. red	6	4	2.9	0.3	1.8	0.6	0.2	0.2	0	38
AF1379-3	4	3	4	8	3	2.0	0.0	1.3	0.0	0.7	0.7	0	53
AF1425-1	4	2	3	7	5	3.7	0.7	2.3	0.7	0.0	0.0	0	65dr
AF1426-1	4	6	6	6	3	7.6	2.0	4.8	0.5	0.3	0.3	0	62dr
AF1470-17	7	7	5	7	4	2.1	1.8	0.0	0.0	0.2	0.2	0	52
AF1470-18	6	6	5	7	3	0.9	0.0	0.7	0.0	0.2	0.2	0	64
AF1475-16	5	5	4	7	5	2.8	0.8	1.6	0.0	0.4	0.4	0	64dr
ND1871-3R	6	6	5 dk. red	6	3	0.0	0.0	0.0	0.0	0.0	0.0	0	50
Late Test - 119 days													
Katahdin (std)	7	6	5	8	1	7	5.6	3.9	1.7	0.0	0.0	0	55nu
Chipeta	9	9	8	7	2	7	6.1	4.8	1.1	0.2	0.0	0	52nu
Mainestay	7	6	6	7	1	7	2.4	1.2	1.2	0.0	0.0	0	50dr
St. Johns	7	7	7	7	1	7	6.7	3.6	2.8	0.3	0.0	0	41
AF1455-9	8	7	6	7	1	3	3.1	1.0	1.8	0.3	0.0	0	58dr

¹See standard NE107 rating system for key to codes.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agtron M35 (higher values indicate lighter color): >60 acceptable; nu = non-uniform color;

dr = dark vascular ring; ds = dark stem end. Waller Duncan LSD (K=100) for chip color = 3 (medium test) and 4 (late test).

Maine Table 7. Chip color from 38°F, 45°F, and 50°F storage, reconditioning potential, washed appearance ratings, days to sprout formation, and storage weight losses at 38°F and 50°F for 44 potato varieties grown at Presque Isle, Maine, during 1994 and stored during the 1994-1995 storage season.

Variety	Chip Color from Storage		After-Cooking		Washed Appearance Index ⁴	Days to Indic. Storage Wt. Sprout Length ⁵			Loss %	
	50°F ¹	45°F ¹	38°F ¹	Recond. ²	Darkening ³	PIP	1/2"	38°F	50°F	50°F
Early Trial:										
Superior	59	52	22	57		104	153	3.4	11.4	
Norchip	62	58	41	61		83	146	3.7	17.7	
AF1331-2	57	--	--	--		97	153	3.8	12.5	
AF1424-6	66	63	49	65		104	146	4.5	12.1	
AF1424-7	64	64	58	64		83	146	5.2	19.2	
AF1426-1	64	57	27	50		133	195	2.6	4.7	
AF1438-4	59	45	19	44		111	153	3.6	11.6	
AF1438-5	57	42	17	43		104	139	3.8	21.2s	
AF1438-6	36	--	--	--		83	139	3.0	16.2s	
Waller Duncan LSD	4	5	4	4						
Medium Table Trial:										
Kennebec	66	63	42	63		146	188	4.3	9.4	
Atlantic	63	61	43	60		104	153	3.2	17.6	
Spartan Pearl	64	--	--	62		133	174	4.6	15.6	
Yukon Gold	55	--	--	56		119	174	3.2	6.4	
AF1425-1	59	58	39	58		90	133	2.4	11.6	
AF1438-1	65	63	29	57		104	188	5.3	11.0	
AF1470-17	53	47	17	35		90	133	4.0	17.2	
B0613-2	62	61	43	60		---	83	3.5	16.7	
Waller Duncan LSD	5	3	3	4						

Maine Table 7 cont.

Variety	Chip Color from Storage		After-Cooking Darkening ³	Washed Appearance Index ⁴	Days to Indic. Sprout Length ⁵			Storage Wt. Loss %	
	50°F ¹	45°F ¹			38°F ¹	PIP	1/2"	38°F	50°F
Medium Chipping Trial:									
Kennebec	63	59	44	60	96 (7)	133	167	3.7	9.1
Atlantic	58	60	51	59	90 (6)	104	146	3.4	15.8
MaineChip	62	62	60	58	79 (5)	90	139	4.1	17.7
Snowden	59	60	48	57	54 (5)	104	139	3.8	28.6s
AF875-15	61	60	58	58	85 (3)	104	133	3.9	25.5s
AF1433-4	61	60	44	61	67 (3)	90	133	2.9	15.1
B0172-22	64	65	57	61	96 (6)	104	146	4.0	12.1
B0245-15	67	69	62	63	94 (6)	83	202	4.1	8.1
B0257-12	59	60	58	58	94 (6)	83	119	4.0	27.3s
B0564-8	63	64	55	60	80 (4)	83	133	4.8	25.4s
B0564-9	69	65	54	60	81 (3)	97	167	4.9	14.1
B0585-5	70	67	55	62	94 (8)	104	167	4.2	22.4s
B0635-6	63	62	50	57	91 (6)	83	119	3.5	26.9s
NC012-18	66	63	51	60	91 (4)	90	119	3.6	25.7s
ND2417-6	65	64	57	58	82 (5)	83	111	4.3	15.6
ND2471-8	64	61	46	55	94 (7)	104	167	5.3	13.5
NYE55-44	65	64	56	64	94 (8)	104	167	2.9	13.6
NY87	61	62	58	61	87 (4)	104	146	3.4	15.3
W870	66	62	57	59	88 (4)	97	167	4.1	16.5
Waller Duncan	LSD	3	5	2					

Maine Table 7 cont.

Variety	Chip Color from Storage		After-Cooking Darkening ³	Washed Appearance Index ⁴	Days to Indic. Storage Wt.		
	50°F ¹	45°F ¹ 38°F ¹ Recond. ²			Sprout Length ⁵ PIP 1/2"	Loss % ⁶ 38°F	50°F
Late Trial:							
Katahdin	60	50	35	59	76	125	6.1 11.4
Chipeta	59	58	35	58	83	139	6.8 13.4
Mainestay	55	--	--	--	76	98	6.0 18.8s
Monona	66	64	46	63	83	132	4.0 11.9
St. Johns	48	--	--	--	76	106	6.4 17.8
AF1452-28	64	64	57	62	83	125	8.2 15.2
B0405-4	56	--	--	--	62	98	7.3 19.5
MN12823	50	--	--	--	98	162	6.1 11.1
NYE55-35	64	64	37	64	76	153	5.8 14.4
Waller Duncan LSD	5	5	5	3			
Russet/Processing Trial:							
Russet Burbank	--	--	--	--	83	181	3.3 6.0
BelRus	--	--	--	--	83	132	5.2 17.8s
Castile	61	52	20	57	90	132	5.2 11.4
Goldrush	51	47	25	56	62	98	4.2 14.8
AF1481-4	59	53	20	53	83	125	5.0 22.8s
B0493-8	39	32	16	29	69	90	4.7 21.4s
B9922-11	54	48	24	57	83	153	3.1 15.7
W1099Rus	61	55	32	61	69	106	4.2 19.6s
Waller Duncan LSD	4	6	5	5			

Maine Table 7 cont.

¹Stored at 38°F, 45°F, or 50°F, 85% R.H. from harvest until February 2 to 16, 1995. Chip color scores are from an Agtron Model M-35 Process Analyzer (Agtron, Inc., Sparks, Nevada; calibrated with black disk "0" = 0 and white disk "90" = 90). Chips were crushed and reported values are means from four replicate samples. Each sample was read three times and was thoroughly mixed between readings. Higher numbers indicate lighter chip colors.

²Reconditioned samples were taken from 38°F and placed at 70°F for a 3-week period starting on January 12, 1995. See Agtron description under footnote #1.

³Samples were not processed for after cooking darkening during 1994-95.

⁴Unreplicated samples weighing approximately 7500 grams were stored at 45°F and 85% R.H. until January 18 to 24, 1995. Tubers were then washed and graded. First number indicates % U.S.#1 grade tubers in sample. Numbers in parentheses indicate subjective appearance of the sample using standard NE107 appearance code. Codes indicate major external defects as follows: M=misshapen, NR=nonuniform russetting, PC=poor color, SB=sunburn, GC=growth cracks, CS=common scab, SS=silver scurf, RS=russet scab, DR=dry rot, SR=soft rot, BS=black scurf, LE=enlarged lenticles, B=bruises, BD=blackdot, PW=powdery scab, RA=red areas, SZ=small tuber size.

⁵Tubers were stored at 45°F, 85% R.H.

⁶Percentage sprout and weight loss following storage from harvest until April 7 to 10, 1995, at indicated temperature and 85% R.H. Codes "s" or "r" indicate heavily sprouted or spoiled samples, respectively.

MAINE

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University of Maine Potato Breeding Project

Objectives: The development of new potato varieties of three types: 1. high-yielding, round, white, fresh market varieties with good table qualities and resistance to scab; 2. round white chipping varieties with high dry matter and low sugars, especially after long term cold storage; and 3. russet varieties with high yield and high dry matter suitable for french fry processing and fresh market.

Seed and seedling production.

A total of 31 parent plants were intercrossed in 35 different combinations to produce 19,730 seeds. An additional 4,549,655 seeds were obtained from 80 field plantings. Greenhouse plantings of 308,300 true seeds yielded 24,481 seedlings from which 16,693 tubers were harvested.

Seedling selection. A total of 232 (0.56%) new selections were saved from 41,541 single hills. From the 198 12-hill plots, 50 (25%) were saved for further testing. Seventy-five of 97 60-hill plots were selected, and 150 advanced selections were maintained and tested.

Disease tests. In cooperation with Drs. David Lambert, Richard Storch, Bill Brodie, Robert Goth, Gilbert Banville, John Wells, and Simeon Leach, a number of selections were

tested for resistance to several diseases. All tests were inoculated either directly or on spreader rows within the plots. Results were as follows: 2 of 7 were resistant to corky ring spot; 14/103 to acid scab; 37/132 to common scab; 29/110 to verticillium; 45/130 to golden nematode; 5/7 to Fusarium roseum 'Sambucinum'; and 125/132 to net necrosis.

Physiological disorders.

Additional tests for physiological disorders showed 29 of 49 resistant to hollow heart; 26/51 to blackspot bruising; and 15/53 to shatter bruising.

Chip tests. After processing in December and February, from five different storage temperatures, seven entries had better average chip color than Monona: AF 1424-7, AF 1668-60, AF 1668-47, CS 7232-4, AF 1424-6, ND 860-2, and Somerset.

Processing and Cooking tests.

Terry Work (Food Sciences, University of Maine, Orono) conducted french fry tests of eighteen selections, and cooked quality tests for thirteen selections from 1994 plantings.

Commercial Trials. Along with MaineChip, Mainestay, Portage, and St. Johns, nine numbered selections were grown on commercial farms in 1995:

AF 875-15, AF 1331-2,
AF 1425-1, AF 1426-1,
AF 1433-4, AF 1438-6,
AF 1470-17, AF 1475-16,
and AF 1481-4.

Chipping selections:

MaineChip (AF 875-16; AF 186-2 x AF 84-4) was named in 1991. It is a high dry matter, cold-

chipping variety, with yields of marketable size equal to Snowden. Hollow heart has been a problem on occasion; and mosaic shows up late in this variety. Yields in Central Maine were very poor in 1994. Chip color was not very good early in the season, but was very acceptable in February.

AF 875-15, a sibling of MaineChip, has better yields than MaineChip and equal dry matter, but is not as good after cold storage. It is a good chipper from the field and does not show the heat necrosis that Atlantic does. Hollow heart is very rare, but there were several growth cracks in 1994.

AF 1433-4 (AF 811-8 x CS 7232-4) is being grown commercially as an early chipper. Its gravity is not high, and it does not have good chip color after December, but yields are fairly good.

Round white table varieties:

Portage (CS 7697-24; Raritan x BR 6831-5) is an early maturing variety with high yields and low gravity. It was named in 1992. Its advantage over Superior is better resistance to verticillium wilt and rhizoctonia. Disadvantages are susceptibility to scab and purple streaking, and skinning at harvest.

St.Johns (AF 828-5; BR 6317-21 x CC 14-3a) is a late maturing variety with high yields and good disease reactions. It is resistant to golden nematode and the corky ring spot virus, and does well all along the east coast. Two commercial

growers have had trouble storing it, but yields and quality were good. It has a good appearance washed.

Mainestay (AF 431-9 open pollinated) is slightly higher yielding than St.Johns, but is more susceptible to scab. It has also shown purple streaks on occasion. It is difficult to kill, and if dug green can give problems in storage. High yields and good size are its best qualities.

AF 1470-17 (CS 7589-8 x Portage) is a very high-yielding variety with good appearance and table quality. Problems seen so far have been hollow heart, purple streaks, and pressure bruising. One grower is very pleased with it and wants it named.

AF 1331-2 (AF 584-1 x Portage) is an oblong white table variety with good size, appearance and yields. Seed should be suberized and knobby second growth can be a problem. This selection will die due to lack of commercial interest and poor stands in one large scale test.

AF 1426-1 (AF 637-1 x AF 564-2) is an early selection with yields equal to Superior and good table qualities. Growth cracks have sometimes been a problem. There is commercial interest in Maine, Ohio, and Michigan.

AF 1425-1 (AF 330-1 x AF 811-4) is a medium to medium-late selection with fair yields and gravity and resistance to wart, golden nematode, net necrosis, scab, and rhizoctonia. It stores well and resists pressure bruise.

AF 1438-6 (AF 686-3 x Portage) is a medium-early maturing selection. Two commercial growers will replant this in 1996. Yields have been very high, but growth cracks may be a problem for this selection.

AF 1475-16 (AF 303-5 x Portage) looks very promising with only one small commercial test so far. It is early maturing with high yields and some resistance to Fusarium.

Russets:

AF 1481-4 (CS 7966-7 x SA 8207-3) is the only russet with commercial test results. Its yields have been rather low and it is a blocky type, rather than long. This one will be discontinued.

Michigan Potato Variety Evaluations

D.S. Douches, R.W. Chase, K. Jastrzebski, R. Hammerschmidt, C. Long, D. Maas, Peter Hudy, and K. Walters¹

The objectives of the evaluation are to identify superior varieties for fresh market or for processing and to develop recommendations for the growers of those varieties. The varieties were compared in groups according to the tuber type and skin color and to the advancement in selection. Each season total and marketable yields, specific gravity, tuber appearance, incidence of external and internal defects, chip color (from field, 45 and 50°F storage), after cooking darkening, dormancy (at 50°F), as well as susceptibilities to common scab, *Fusarium* dry rot, *Erwinia* soft rot and blackspot bruising are determined. We are now in the process of integrating late blight resistance testing into the evaluation procedure.

Six field experiments were conducted at the Montcalm Research Farm in Entrican. They were planted in randomized complete block design with four replications. The plots were 23 feet long and spacing between plants was 12 inches. Inter-row spacing was 34 inches. The trials were planted to fumigated ground and supplemental irrigation was applied as needed.

Both round and long variety groups were harvested at two dates. They are referred to as the Date-of-Harvest trials. The other two field experiments were the North Central Regional and European trials. In each of these trials the yield was graded into four size classes, incidence of external and internal defects in > 3.25 in diameter or 10 oz. potatoes were recorded, and samples for specific gravity, chipping, dormancy, disease tests, bruising and cooking tests were taken. Chip quality was assessed on 25-tuber samples, taking two slices from each tuber. Chips were fried at 365°F. The color was measured visually with the SFA 1-5 color chart. Tuber samples were also stored at 45 or 50°F for chip-processing out of storage in January and March.

¹Douches is a professor, Chase is a professor emeritus, Jastrzebski is a visiting scholar, Long is a research technician, and Hudy, Maas, and Walters are graduate assistants in the Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824. Hammerschmidt is a professor in the Department of Botany and Plant Pathology, Michigan State University, East Lansing, MI 48824.

Round White Varieties

Fourteen varieties and 11 breeding lines were compared at two harvest dates. Atlantic, Snowden, Onaway, and Superior were used as checks. The average yield was high as in 1994 but specific gravity values were well below normal levels. Internal brown spot was prevalent in the late harvest. The results are presented in Tables 1 and 2.

Variety characteristics. *Chaleur* - medium-early fresh market variety from Canada. Yield and specific gravity were low during 4 years of testing in Michigan. Tubers were large, few per hill, and of good appearance with a very good flesh color. Internal defects are low. It is reported to have moderate resistance to scab, but scab tests in 1995 suggest that it has moderate susceptibility to scab. The testing of this line will be discontinued.

Portage - early to medium-early fresh market variety. Showed good yield potential and tuber appearance was good, specific gravity low, and very susceptible to scab. Internal defects were prevalent in the previous two years. In 1995 it yielded well in the early trial but had only average yields in the later harvest. The testing of this line will be discontinued.

Prestile - very late, fresh market variety from Maine. It has shown excellent yield potential and good tuber shape, specific gravity is medium and it is resistant to scab. Internal defects have been low in previous years but IBS was prevalent in the oversize tubers in 1995. The testing of this line will be discontinued as no seed acreage has been maintained.

Mainstay (AF1060-2) - late, fresh market variety of high yield potential and excellent internal quality, but low specific gravity. It is susceptible to scab. Mainstay performed above average in the trials but has shown higher yield potential in some on-farm trials.

St. Johns - tested in 1993 as AF828-5, medium late fresh-market variety of high yield potential (but consistently lower than AF1060-2), but low specific gravity. There was some variation in shape, but general appearance was good with large tubers and excellent internal quality. In 1995 its performance was quite good, however, it is susceptible to scab infection.

MSB076-2 - this MSU selection is high yielding, has very high specific gravity, acceptable chip quality and resistance to scab. In 1995 the yield was similar to Atlantic and we observed a tendency for hollow heart in oversize tubers.

AC Ptarmigan - this protected variety from Ag Canada is a high yielding clone with excellent internal quality, low specific gravity with oval-shaped tubers. It has moderate resistance to scab. Its oblong-oval shape causes some difficulty in finding the proper market for this variety. The testing of this line will be discontinued.

ND2417-6 - a cold-chipping selection with above average yield potential, but moderate specific gravity. It has performed well in regional trials, but it is susceptible to scab.

ND2471-8 - a cold-chipping selection with below average yield potential, medium specific gravity and small tuber size. In 1995 the yield was higher than observed in previous years. Hollow heart was observed in the oversize tubers. It is very susceptible to scab and early dying was also noted. The testing of this line will be discontinued.

NY102 - this selection has average yield, few oversize tubers and a moderately high specific gravity. It is moderately susceptible to scab.

AF1426-1 - a new fresh market selection from Maine which had the highest yield in the early harvest. It produced a large percentage of oversize tubers with excellent internal quality.

NY103 - a new chip-processing/fresh market selection from New York which has high yield potential, excellent internal quality and appearance, but the specific gravity may be too low.

NY101 - a light-yellow-fleshed selection from New York. This line has an excellent shape and very high yield potential over the past three years. It is resistant to scab. In 1995 we observed IBS in the oversize tubers. The tubers are netted.

NDO1496-1 - a high-yielding, late maturing selection from Oregon. This line is a cold-chipping selection with excellent internal quality. It also has a bright appearance, but is highly susceptible to scab.

Pike (E55-35) - an average yielding selection from New York. It chip-processes well with resistance to scab similar to Superior. At times it has shown IBS in the tubers.

MSB083-1 - an MSU selection with a bright round appearance. This selection is in grower trials and its performance has been variable. In 1995 IBS was noted in the oversize tubers for the first time.

MSB107-1 - an MSU selection for the tablestock market. It is a bright-skinned round selection with excellent internal quality. This selection has been in grower trials and its performance has been variable.

NDA2031-2 - a very late-maturing selection from Idaho. It is a cold chip-processing line that produces a large number of 'B'-size tubers. It also very susceptible to scab. The testing of this line will be discontinued.

Long Varieties

Most of the entries in the long-type trial were late maturing resulting in low yields and small tuber size at 94 days, the first date-of-harvest (Table 3). At the second harvest on September 20 (135 days), yields for all entries had increased

substantially (Table 4). Tuber size was greater, however, specific gravity values were below normal due to the warmer night temperatures during August. All entries had less culls and pickouts when compared with Russet Burbank. Hollow heart was most severe in A86102-6, occurring in 96% of the tubers over 10 ounces. Hollow heart was also greatest in Russet Burbank, JS91-95, and AO82611-7.

Variety characteristics. *JS111-28* and *JS91-95* - these two entries were provided by J.R. Simplot. *JS111-28* had the highest yield with good general appearance, good russetting and shallow eyes. Internal brown spot was noted in the larger potatoes. *JS91-95* had a lower yield, lower specific gravity and 30% hollow heart in the larger potatoes. The type was not as smooth and uniform as *JS111-28* and some "alligator" skin was noted.

A7961-1 - is an USDA-Aberdeen entry which yielded much better in 1995 at both harvest dates. It had uniform appearance, heavier russetting than Russet Burbank, and minimal internal defects. Tests in the Northwest have shown occasional sugar buildup in storage.

AO82611-7 - produced good yield but had a higher than average percent of pickouts and hollow heart. Reported to have some resistance to early dying. Tuber shape is long but tuber width is narrow.

Shepody - yields were good, however scab, some sprouting, hollow heart, vascular discoloration, and brown center were noted in the large tubers at harvest.

Crestone Russet - is an early maturing, fresh market, long russet from Colorado. In 1994, it was very slow in emergence, however, this was not noted in 1995. It had minimal internal defects, good appearance and tubers are oblong to oval and flattened.

A86102-6 - is a new entry from USDA-Aberdeen with yields slightly above average. Specific gravity was low and hollow heart severe. It is a lighter russet with some alligator-type skin.

MSB106-8 - is an entry from MSU with blocky to oblong tubers that are netted and have shallow eyes. Yields and size distribution were good and internal defects were low.

B9922-11 - is an entry from USDA-Beltsville. Its yields were higher in 1994 and average in 1995. It has medium-high specific gravity. Tubers are oblong with a heavy, dark russet and good general appearance. Some thumbnail cracks were noted following harvest.

COO83008-1 - is an Oregon selection from the Colorado breeding program. Yields were below average and specific gravity was low. The tubers were well shaped with good type.

A84118-3, *A8495-1*, and *Russet Nugget* all produced very poor yield with small tuber size and a high percentage of tubers under four ounces. *Russet Nugget* is not adaptable to Michigan.

North Central Regional Trial

The North Central Trial is conducted in a wide range of environments, in 14 states and provinces, to provide adaptability data for the release of new varieties from North Dakota, Minnesota, Wisconsin, Michigan, and Beltsville, MD. In 1995, 18 breeding lines and five named varieties were tested of various tuber types in Michigan. The results are presented in Table 5. The range of yields were wide. A Beltsville selection, *B0766-3*, yielded well, had a very good appearance and showed resistance to scab. *ND2417-6* performed well in Michigan and other locations. The MSU selection, *MSB076-2*, had above average yields in this trials, and was noted as performing well in other locations.

European Trial

Through the support of the New Brunswick Potato Agency and Swavlof-Weibull of Sweden, 15 European varieties and advanced selections were tested. Yukon Gold and Saginaw Gold were used as checks. The rose-skinned, yellow-fleshed selection from MSU, *MSD040-4RY*, was also tested. The results are summarized in Table 6. Most of the varieties were late to very-late in maturity and produced a small percentage of oversize tubers. *SW88-113* was high-yielding, had very good appearance and excellent internal quality. It has a light yellow flesh. *Lily*, a yellow-fleshed variety, was high yielding but the tubers were irregular in appearance. *Ofelia*, also was high-yielding but had variable shape and second growth. *Sante* had a high overall rating. Poor tuber shapes due to either knobs and/or points were observed for *Estima*, *Agria*, *Hulda*, *Island Sunshine*, *Rosamunda*, *SW91-102*, *Concorde*, and *Matilda*.

Potato Scab Evaluation

Each year a replicated field trial at the MSU Soils Farm is conducted to assess resistance to common and pitted scab. The varieties are ranked on a 1-5 scale based upon a combined score for scab coverage and lesion severity. Usually examining one year's data does not indicate which varieties are resistant but should begin to identify ones that can be classified as susceptible to scab. As in 1994, the level of infection was quite high for 1995 and the levels of infection in the check cultivars were in accordance with previous observations. Our goal is to evaluate important advanced selections and varieties in the study at least three years to obtain a valid estimate of the level of resistance in each line. Table 7 summarizes the 1995 scab trial results for the lines in these trials. All MSU selections are reported in the breeding report. Many russet lines showed resistance to scab infection. Round white tablestock clones with resistance included Superior, Onaway, AC Ptarmigan (oval), Prestile, B0717-1, and AF1426-1. Yellow-fleshed selections with resistance were NY101 and SW88-109. Scab resistance was also

identified in the chip-processing clones Pike, B0766-3, B0763-15, and some MSU selections MSB076-2 and MSA091-1.

Table 1. Round whites: early harvest, Montcalm Research Farm. Harvested August 10, 1995 (94 Days).

CLONE	CWT/A		PERCENT OF TOTAL ¹						TUBER QUALITY ²				TOTAL	3-YR	
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	HH	VD	IBS	BC	CUT	AVE
AF1426-1	387	429	90	4	80	11	6	1.062		4	0	0	0	27	---
SUPERIOR	382	449	85	12	82	3	3	1.063		1	0	0	0	13	331
PORTAGE	382	471	81	14	78	3	5	1.061		1	0	0	1	12	344
ND2417-6	376	474	79	19	76	3	2	1.066		1	0	0	0	11	292*
ST. JOHNS	375	405	92	6	85	8	1	1.060		0	0	0	1	22	317
NY103	369	416	89	8	84	4	4	1.064		0	0	0	0	16	---
ATLANTIC	364	422	86	10	82	4	4	1.075		10	0	1	0	15	317
NY101	363	421	86	11	83	4	3	1.063		1	0	0	0	12	---
PRESTILE	356	386	92	7	82	10	1	1.062		2	0	0	0	23	289
AC PTARMIGAN	354	415	85	9	81	4	5	1.062		2	0	0	0	12	333*
FL1833	347	378	92	6	89	3	2	1.072		7	0	0	0	11	286*
MAINESTAY	343	423	81	19	80	2	0	1.064		0	0	0	0	6	295
ONAWAY	332	393	85	11	80	5	4	1.065		0	0	0	1	15	276
FL1863	332	374	89	8	83	6	3	1.072		0	0	0	0	18	---
ND2471-8	320	404	79	18	78	1	3	1.071		3	0	0	0	4	278*
CHALEUR	295	316	93	3	81	13	4	1.060		8	1	0	0	26	234
NY102	293	367	80	18	79	1	2	1.070		1	0	0	0	4	264*
NDO1496-1	283	326	87	12	84	3	1	1.071		1	0	0	0	7	---
MSB076-2	282	364	78	19	75	2	4	1.075		2	0	0	0	6	---
FL1533	260	323	80	13	75	5	7	1.065		2	0	0	2	13	227*
SNOWDEN	229	325	70	24	68	2	6	1.072		0	0	0	0	6	245
PIKE	222	286	78	21	77	1	1	1.072		0	0	0	0	2	240*
MSB083-1	196	264	74	22	72	3	4	1.065		1	0	0	0	6	---
MSB107-1	184	215	85	11	79	6	4	1.065		0	0	0	0	10	---
NDA2031-2	134	283	47	51	47	0	1	1.068		0	0	0	0	0	----

LSD_{0.05}

49 45

.004

¹SIZE

B - < 2"

A - 2-3.25"

OV - > 3.25"

PO - PICKOUTS

* - two-year US #1 average

²QUALITY

HH - HOLLOW HEART

VD - VASCULAR DISCOLORATION

IBS - INTERNAL BROWN SPOT

BC - BROWN CENTER

Planted May 8, 1995

Table 2. Round whites: late harvest, Montcalm Research Farm. Harvested September 18, 1995 (133 Days)

CLONE	<u>CWT/A</u>		<u>PERCENT OF TOTAL¹</u>						SFA	<u>TUBER QUALITY²</u>				<u>TOTAL</u>	<u>3-YR</u>
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR		HH	VD	IBS	BC	CUT	AVE
NY101	604	648	93	5	71	22	1	1.062	--	2	0	20	0	40	605
PRESTILE	602	659	91	5	67	24	3	1.068	--	0	0	28	0	40	511
NDA2031-2	542	724	75	22	71	4	3	1.069	2.0	0	1	1	0	13	425*
NDO1496-1	528	570	93	6	71	22	1	1.073	1.5	3	1	1	1	40	529*
ND2471-8	528	656	80	14	75	5	6	1.071	1.5	10	0	1	1	24	380
NY103	523	558	94	4	73	20	2	1.058	3.0	2	2	0	0	36	---
AC PTARMIGAN	510	583	87	6	67	21	7	1.058	--	0	7	3	0	40	445*
FL1833	492	513	96	3	73	23	1	1.072	1.5	8	0	9	0	40	444*
FL1533	484	561	86	6	57	29	7	1.068	1.5	3	0	0	1	40	488
ND2417-6	480	578	83	14	77	6	3	1.064	1.5	0	0	2	0	28	370
ST. JOHNS	473	502	94	4	60	34	2	1.063	--	2	1	4	1	40	435
FL1863	468	525	89	5	62	27	5	1.074	--	3	0	9	0	40	---
MAINESTAY	466	580	80	14	72	8	6	1.060	--	0	2	4	0	35	468
PORTAGE	452	548	82	11	75	8	6	1.061	--	3	0	6	2	23	431
SUPERIOR	447	523	85	12	81	5	3	1.061	--	5	0	1	0	17	367
ATLANTIC	443	488	91	7	76	15	2	1.078	1.5	17	0	10	1	31	442
MSB076-2	423	511	83	12	78	5	5	1.076	1.5	13	0	0	0	20	456
ONAWAY	414	491	84	10	72	12	6	1.058	--	2	4	0	1	39	362
AF1426-1	399	516	77	4	42	35	19	1.061	--	2	0	4	0	40	---
MSB083-1	397	479	83	14	73	10	3	1.067	1.5	1	0	24	0	36	332
SNOWDEN	390	486	80	11	66	15	9	1.071	1.0	5	2	1	2	36	443
NY102	377	459	82	16	79	3	2	1.068	1.5	0	0	0	0	14	341*
CHALEUR	343	353	97	3	65	32	0	1.058	--	5	2	1	2	40	316
MSB107-1	321	355	91	6	53	37	4	1.063	--	0	0	0	0	40	297
E55-35	311	364	85	12	76	10	3	1.076	1	0	16	0	0	34	308*

LSD_{0.05}

85 87

0.003

¹SIZE

B - < 2"

A - 2-3.25"

OV - > 3.25"

PO - PICKOUTS

²QUALITY

HH - HOLLOW HEART

VD - VASCULAR DISCOLORATION

IBS - INTERNAL BROWN SPOT

BC - BROWN CENTER

* - two-year US #1 average

Planted May 8, 1995

Table 3. Long types, Montcalm Research Farm, Harvested August 10, 1995 (94 days)

CLONE	<u>CWT/A</u>		<u>PERCENT OF TOTAL</u> ¹						<u>TUBER QUALITY</u> ²				<u>TOTAL</u>	<u>3-YR</u>
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	HH	VD	IBS	BC	CUT	AVE
A7961-1	203	280	72	24	67	5	4	1.069	4	0	0	0	12	153*
B9922-11	201	284	71	26	65	6	4	1.076	3	0	0	1	15	---
SHEPODY	196	280	70	28	64	6	2	1.067	1	0	1	0	14	---
AO82611-7	193	310	62	35	60	2	3	1.071	4	0	0	0	5	182*
GOLDRUSH	165	264	62	36	55	7	2	1.061	0	0	0	0	15	197
R BURBANK	160	294	54	33	54	0	13	1.070	0	0	0	0	0	137
COO83008-1	159	227	70	29	67	4	0	1.067	0	0	0	0	7	143*
JS111-28	158	284	55	40	55	0	4	1.069	0	0	0	0	1	---
A86102-6	148	298	50	47	48	1	4	1.068	3	0	0	0	3	---
MSB106-8	133	216	61	33	57	4	6	1.070	1	0	0	0	7	---
JS91-95	122	206	59	37	58	1	3	1.069	1	0	0	0	2	---
CRESTONE R	117	218	54	43	48	5	3	1.053	0	0	1	0	9	119*
A8495-1	64	163	40	56	39	1	5	1.068	0	0	0	0	1	74*
A84118-3	48	194	25	74	25	0	2	1.070	0	0	0	0	0	---
R NUGGET	6	53	12	88	12	0	0	----	0	0	0	0	0	---

LSD_{0.05}

37 46

0.003

¹SIZE

B - < 4 OZ

A - 4-10 OZ

OV - > 10 OZ

PO - PICKOUTS

²QUALITY

HH - HOLLOW HEART

VD - VASCULAR DISCOLORATION

IBS - INTERNAL BROWN SPOT

BC - BROWN CENTER

* - two-year US #1 average

Table 4. Long types: late harvest, Montcalm Research Farm, Harvested September 20, 1995 (135 days)

CLONE	<u>CWT/A</u>		<u>PERCENT OF TOTAL¹</u>						<u>TUBER QUALITY²</u>				<u>TOTAL</u>	<u>3-YR</u>
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	HH	VD	IBS	BC	CUT	AVE
JS111-28	425	561	76	18	57	19	6	1.072	5	0	6	0	40	---
A7961-1	406	484	84	11	50	34	5	1.071	2	0	0	0	40	335*
AO82611-7	342	506	68	22	56	11	10	1.069	11	0	2	0	39	320*
SHEPODY	313	439	71	14	46	25	15	1.067	6	3	0	3	32	---
JS91-95	290	391	74	22	61	13	4	1.069	11	0	5	0	36	---
CRESTONE R	287	386	74	21	55	20	4	1.055	1	0	0	0	40	255*
A86102-6	284	395	72	23	62	10	5	1.067	27	0	0	0	28	---
MSB106-8	278	345	81	16	61	20	4	1.070	2	0	2	0	30	317*
B9922-11	273	338	81	17	64	17	2	1.073	4	0	0	0	32	312*
GOLDRUSH	263	358	73	23	51	22	3	1.057	1	0	0	0	32	284
R BURBANK	261	409	64	19	49	15	17	1.070	12	0	2	0	34	279
COO83008-1	228	281	81	18	71	10	0	1.064	1	0	0	1	26	239*
A84118-3	150	242	62	37	58	3	1	1.071	1	0	0	0	7	---
A8495-1	97	200	48	43	44	4	9	1.066	0	0	2	0	7	204*
R NUGGET	77	151	51	46	49	1	3	1.077	0	1	0	0	2	---

LSD_{0.05} 104 112 0.005

<u>¹SIZE</u>	<u>²QUALITY</u>
B - < 4 OZ	HH - HOLLOW HEART
A - 4-10 OZ	VD - VASCULAR DISCOLORATION
OV - > 10 OZ	IBS - INTERNAL BROWN SPOT
PO - PICKOUTS	BC - BROWN CENTER

* - two-year US #1 average

Planted May 8, 1995

Table 5. North Central Regional Trial, Montcalm Research Farm, Harvested September 14, 1995 (125 Days)

CLONE	<u>CWT/A</u>		<u>PERCENT OF TOTAL¹</u>						<u>TUBER QUALITY²</u>					<u>TOTAL</u>
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SFA	HH	VD	IBS	BC	CUT
W1149	443	485	91	6	62	29	3	1.073	2.0	12	4	1	1	40
B0766-3	433	465	93	5	86	8	2	1.073	1.5	10	0	0	0	27
B0752-12	432	528	82	5	66	15	13	1.069	2.5	1	0	1	0	34
MN16191	420	509	82	12	72	10	6	1.072	3.5	0	0	13	0	22
ND2417-6	414	511	81	14	76	5	5	1.063	1.5	0	0	0	0	21
W1242	408	453	90	7	72	18	3	1.072	1.5	20	0	12	0	40
B0856-4	406	505	80	6	63	18	13	1.056	2.5	1	0	3	0	40
MN16201	404	478	85	9	57	27	6	1.053	2.0	0	0	1	0	40
RED PONTIAC	401	484	83	9	62	21	8	1.054	4.5	7	1	1	0	40
B0763-15	381	401	95	3	68	27	2	1.067	1.5	4	0	1	1	40
SNOWDEN	359	419	86	8	66	20	6	1.071	1.0	7	1	0	2	39
ATLANTIC	353	402	88	5	63	25	7	1.075	2.5	30	0	5	0	38
MSB076-2	330	429	77	16	71	6	7	1.076	1.5	6	0	0	1	17
B0717-1	305	379	80	16	78	2	4	1.067	2.0	3	1	0	0	6
MSA091-1	299	360	83	8	64	19	9	1.073	1.5	1	0	5	7	33
W1189	290	350	83	12	76	7	5	1.069	2.0	0	0	12	0	22
NORCHIP	269	364	74	9	59	15	17	1.065	1.5	3	0	3	4	34
DR NORLAND	264	335	79	11	72	7	10	1.051	4.0	1	0	1	0	17
ND2471-8	264	359	73	16	70	4	11	1.071	3.5	2	0	0	0	12
ND2225-1R	236	369	64	34	63	1	2	1.052	4.0	0	0	0	1	2
MSB007-1	203	264	77	16	74	3	7	1.062	3.0	0	0	0	0	5
P84-13-12	184	279	66	24	62	4	10	1.069	1.5	1	0	0	0	8
MN15620	153	232	66	29	66	0	4	1.064	2.0	0	0	0	0	0

LSD_{0.05}

86

88

0.0004

¹SIZE

B - < 2"

A - 2-3.25"

OV - > 3.25"

PO - PICKOUTS

²QUALITY

HH - HOLLOW HEART

VD - VASCULAR DISCOLORATION

IBS - INTERNAL BROWN SPOT

BC - BROWN CENTER

Planted May 12, 1995

Table 6. European trial, Montcalm Research Farm, Harvested September 29, 1995 (144 Days)

CLONE	<u>CWT/A</u>		<u>PERCENT OF TOTAL¹</u>						SFA	<u>TUBER QUALITY²</u>				<u>TOTAL</u>
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR		HH	VD	IBS	BC	CUT
SW88-113	589	676	87	11	83	5	1	1.063	3.0	1	0	0	0	26
LILY	541	763	71	21	70	0	8	1.064	2.5	1	1	1	0	3
OFELIA	522	689	76	21	75	0	3	1.070	1.5	0	0	0	0	3
SANTE	488	602	81	13	76	5	6	1.075	2.0	0	3	9	0	22
ESTIMA	390	517	75	15	69	7	9	1.064	4.0	1	0	12	0	26
SAGINAW GOLD	385	457	84	9	71	13	7	1.067	1.5	4	0	1	0	29
SW91-102	360	455	79	14	77	2	7	1.084	2.0	1	0	2	0	9
SW88-109	360	486	74	20	69	5	6	1.057	3.5	1	1	1	0	21
CONCORDE	325	464	70	24	68	2	6	1.067	3.5	0	0	0	0	8
ROSAMUNDA	299	422	71	23	70	1	6	1.077	--	1	0	0	0	3
PENTA	297	386	77	21	76	1	2	1.060	3.0	0	0	0	0	3
AGRIA	287	381	75	14	71	5	11	1.064	--	4	0	0	0	14
MATILDE	262	543	48	49	48	0	2	1.082	--	0	0	0	0	0
HULDA	259	463	56	37	56	0	8	1.059	--	0	0	0	0	0
YUKON GOLD	253	307	82	12	74	9	5	1.065	--	5	1	0	0	20
MSD040-4RY	236	345	68	28	67	1	3	1.079	2.0	0	0	0	0	4
ISLAND SUN	169	287	59	40	59	0	1	1.074	--	0	0	0	0	0
BRIGHT	158	266	59	36	59	0	5	1.062	--	0	0	0	0	0
LSD _{0.05}	115	120						0.005						

¹SIZE
B - < 2"
A - 2-3.25"
OV - > 3.25"
PO - PICKOUTS

²QUALITY
HH - HOLLOW HEART
VD - VASCULAR DISCOLORATION
IBS - INTERNAL BROWN SPOT
BC - BROWN CENTER

Planted May 8, 1995

Table 7. 1995 Scab trial, MSU Soils Farm

Clone	Rating	Clone	Rating
A082611-7	1	Rosamunda	2.5
A7961-1	1	Red Pontiac	2.5
A8495-1	1	Atlantic	3
A86102-6	1	B0752-12	3
B0717-1	1	Bright	3
B9922-11	1	Chaleur	3
C0080011-5	1	FL1533	3
C0083008-1	1	FL1863	3
Goldrush	1	M19-4	3
Lemhi Russet	1	M28-3	3
NY101	1	M39-4	3
Pike	1	Mainestay	3
Prestile	1	NY102	3
R. Nugget	1	Saginaw Gold	3
A84118-3	1.5	Sante	3
AC PTARMIGAN	1.5	St. Johns	3
AF1426-1	1.5	SW88-113	3
B0763-15	1.5	SW92-102	3
B0766-3	1.5	W1189	3
M14-1	1.5	W1242	3
Onaway	1.5	Agria	3.5
Pembina C	1.5	MN16191	3.5
Superior	1.5	ND2417-6	3.5
SW88-109	1.5	ND2471-8	3.5
FL1833	2	NDA2031-2	3.5
Lily	2	NY103	3.5
M14-6	2	Snowden	3.5
Matilda	2	W1149	3.5
R Burbank	2	Yukon Gold	3.5
Hulda	2.5	AF1470-17	4
Island Sunshine	2.5	Concorde	4
MN15620	2.5	Estima	4
MN16201	2.5	ND01496-1	4.5
Ofelia	2.5	Penta	4.5
Portage	2.5	Shepody	4.5

1 = no infection

3 = susceptible

5 = highly susceptible

Nebraska Potato Variety Trials
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Introduction

In 1995, three tablestock (red and russet cultivars) and chipstock (white) trials were conducted. Nebraska also participated in the North Central Regional (NCR) trials. The tablestock trials were conducted at Central City, near North Platte and west of Alliance. The chipstock trials were conducted at Central City, and east and west of Alliance. There were six red, 11 russet, two long white and 16 round white-skinned varieties in the trials.

Materials, Methods and Conditions

Fertilization ranges were 100 to 250 lb N/ac, 65 to 100 lb P/ac, 0 to 40 lb K/ac and 15 to 90 lb S/ac. Low levels of Mn and Zn were added in west Alliance. Seed pieces were cut, treated with TOPS2.5D and stored for three to 14 days at 55 F. Growers used their conventional practices. Insecticides were Thimet applied at planting and post-emergence applications of various products -- Asana, Monitor, Pounce, or Thiodan. Turbo applied pre-emergence was the standard herbicide; Eptam and Poast were applied post-emergence if appropriate. Besides the seed treatment, Bravo, Champ, Dithane, Maneb and Ridomil were used for early or late blight. Vines were desiccated with Diquat and/or mechanical beating.

The trial design was 100 foot strip plots from which three 12-foot samples were taken. The key growth dates for all trials are listed in Table 1.

All trials were conducted on farm sites under center-pivot irrigation; 10 to 20 inches were added in addition to normal rainfall. Rainfall was above normal in April, May and early June, and below normal in August. Temperature was below normal in May and June. There was no hail in the west and below normal hail in the east. Some late blight occurred.

Yield data were taken on tubers under 1 7/8 in, between 1 7/8 and 4 in, and over 4 in sizes. Within a week after harvest, tuber defects and specific gravities on 1 7/8 to 4-inch tubers were determined visually and using a hydrometer, respectively. Chip color of round white-skinned and red-skinned entries, and French fry color of long white-skinned and russet-skinned entries were

measured using an Agtron E-10. Color was determined in March after 5 months storage at 50 F and 24 hours reconditioning at 70 F. Tubers were cured for one month at 60 F prior to being stored.

Results and Discussion

As in previous years, Red LaSoda had the highest yield and percent of US #1 tubers among red-skinned potatoes (Table 2). Specific gravity ranged from 1.060 to 1.071. Dark Red Norland resisted common scab. Alaska Red and W1100R produced the lightest chip color after 6 months storage.

As in 1994, the highest yield of a russet-skinned potato was obtained with AO82-611-7 (Table 2). Specific gravity was below normal probably due to the very unusual weather conditions in May and June. Highest specific gravities were measured with Ranger Russet and A84-95-1. French fry color was lightest for the long white entries Itasca and Shepody, and for the russet entries A81-473-2, A84-95-1, and A86-102-2.

Highest yield among chipstock entries was obtained from Pike (NYE55-44) (Table 3). In general specific gravities were low. The highest gravity was obtained from Atlantic, MaineChip, Pike, Suncrisp, A80559-2, and NDO1496-1. Most round white entries chipped light out of storage giving an Agtron reading of 55 or higher. Mainechip and Pike showed the least infection by common scab; however Pike did have black scurf on tubers. Suncrisp showed the most hollow heart incidence.

Table 1. Key dates for each trial in 1995.

	WA	EA	NP	CC
P	5/19	5/ 4	5/30	4/27
D	8/31	8/25	9/11	8/17
H	9/25	9/13	9/18	8/23
days:				
P to D	104	113	104	113
WA=west Alliance, EA=east Alliance NP=North Platte, CC=Central City				
P = planting, D = vine desiccation, H = harvest.				

Table 2. Yield and tuber quality of tablestock potato entries, 1995.

Entries	Yield US#1 cwt/ac	US#1 as % total	Specific Gravity	Chip Color	Common Scab % tubers	Black Scurf % tubers
west Alliance --						
Alaska Red #	121	87	1.071	13	0	0
Red LaSoda #	436	99	1.070	23	0	80
Dk Red Norland #	375	98	1.060	27	0	80
Red Ruby #	357	94	1.070	16	0	0
ND1871-3R #	363	92	1.065	18	0	50
W1100R #	182	97	1.070	38	0	0
Goldrush *	430	99	1.070	26	0	50
Hilite *	230	97	1.068	15	0	100
Rus. Burbank *	309	91	1.073	23	0	25
Rus. Norkotah *	224	95	1.070	31	0	80
Rus. Nugget *	194	97	1.080	34	0	50
Ranger Rus. *	206	97	1.083	32	0	40
A81-473-2 *	157	96	1.075	49	0	0
A84-95-1 *	303	92	1.083	34	0	0
A86-102-2 *	175	94	1.075	22	0	25
AO82-611-7 *	345	95	1.075	34	0	50
COO83008-1 *	127	98	1.075	42	0	0
Itasca +	339	97	1.075	44	0	0
Shepody +	309	99	1.075	31	0	0
location means:	273	95	1.073	23/32 ^	0	33
North Platte --						
Alaska Red #	115	81	1.060	45	50	50
Red LaSoda #	327	97	1.066	39	5	0
Dk Red Norland #	127	84	1.060	37	0	45
Red Ruby #	175	89	1.066	22	12	10
ND1871-3R #	182	91	1.066	33	0	10
W1100R #	91	88	1.060	54	45	25
Goldrush *	175	79	1.064	39	0	25
Hilite *	151	86	1.060	22	0	95
Rus. Burbank *	109	71	1.074	37	40	10
Rus. Norkotah *	97	73	1.065	30	0	0
Rus. Nugget *	91	83	1.079	49	0	0
Ranger Rus. *	115	73	1.080	45	40	0
A81-473-2 *	61	69	1.069	50	0	0
A84-95-1 *	169	86	1.076	51	0	25
A86-102-2 *	175	85	1.079	63	0	25
AO82-611-7 *	224	84	1.076	38	0	25
COO83008-1 *	91	83	1.065	44	0	0
Itasca +	151	88	1.071	58	0	25
Shepody +	169	86	1.077	52	25	25
location means:	147	83	1.069	38/44 ^	11	21

= red-skinned entry; * = russet-skinned entry; + = long, white-skinned entry.
^ = mean red entry chip color / mean long white and russet entry fry color

Table 2. Yield and tuber quality of tablestock potato entries, 1995.

Entries	Yield US#1 cwt/ac	US#1 as % total	Specific Gravity	Chip Color	Common Scab % tubers	Black Scurf % tubers
Central City --						
Alaska Red #	159	87	1.067	45	40	15
Red LaSoda #	341	98	1.065	19	40	0
Dk Red Norland #	264	94	1.060	13	0	20
Red Ruby #	246	94	1.065	25	15	40
ND1871-3R #	242	92	1.064	23	40	45
W1100R #	135	90	-----	35	45	45
Goldrush *	256	92	1.067	31	0	15
Hilite *	220	93	1.065	31	0	80
Rus. Burbank *	210	84	1.071	44	0	20
Rus. Norkotah *	179	88	1.067	47	0	20
Rus. Nugget *	115	89	-----	42	0	20
Ranger Rus. *	196	89	1.078	27	0	20
A81-473-2 *	107	84	1.070	37	20	45
A84-95-1 *	218	91	1.079	47	0	80
A86-102-2 *	188	92	1.076	45	0	50
AO82-611-7 *	280	93	1.074	41	15	40
Itasca +	252	94	1.070	47	40	20
location means:	209	94	1.066	27/40 ^	15	34

= red-skinned entry; * = russet-skinned entry; + = long, white-skinned entry.

^ = mean red entry chip color / mean long white and russet entry fry color.

Table 3. Yield and tuber quality of chipstock potato entries, 1995.

Entries [all round, white-skinned]	Yield US#1 cwt/ac	US#1 as % total	Specific Gravity	Chip Color	Common Scab % tubers	Black Scurf % tubers
west Alliance --						
Atlantic	318	97	1.086	55	0	5
Andover	309	96	1.090	60	0	10
Mainechip	363	98	1.090	56	0	25
Niska	206	100	1.075	56	0	0
Pike	417	98	1.084	56	0	50
Snowden	369	99	1.080	56	0	0
Suncrisp	321	98	1.087	60	0	0
Wischip	309	95	1.080	58	0	0
A80559-2	224	97	1.085	61	0	0
AC83306-1	309	97	1.067	47	0	100
ND2417-6	272	98	1.075	42	0	40
ND2471-8	405	99	1.084	53	0	0
NDA2031-2	224	80	1.075	57	0	0
NDO1496-1	242	95	1.085	60	0	0
NYE11-45	266	98	1.073	59	0	0
location means:	304	96	1.081	56	0	15

Table 3. Yield and tuber quality of chipstock potato entries, 1995.

Entries [all round, white-skinned]	Yield US#1 cwt/ac	US#1 as % total	Specific Gravity	Chip Color	Common Scab % tubers	Black Scurf % tubers
east Alliance --						
Atlantic	224	90	1.087	58	80	20
Andover	224	91	1.072	60	80	80
Mainechip	254	93	1.093	59	20	0
Niska	194	91	1.076	60	100	0
Pike	260	86	1.086	66	20	10
Snowden	212	88	1.085	57	85	20
Suncrisp	218	92	1.085	62	80	40
Wischip	224	90	1.065	52	80	15
A80559-2	272	93	1.080	61	90	25
AC83306-1	230	94	1.075	59	40	100
ND2417-6	260	92	1.060	57	45	20
ND2471-8	115	86	1.078	63	80	0
NDA2031-2	163	74	1.070	64	100	0
NDO1496-1	194	86	1.086	65	100	0
NYE11-45	254	88	1.071	67	100	0
location means:	220	89	1.079	61	74	22
Central City --						
Atlantic	284	95	1.083	56	45	40
Andover	218	92	1.076	56	40	40
Niska	228	96	1.075	63	20	80
Pike	309	92	1.083	61	15	100
Snowden	286	95	1.079	58	20	20
Suncrisp	238	96	1.082	54	40	100
Wischip	244	93	1.073	53	0	40
A80559-2	220	93	1.082	53	40	100
AC83306-1	262	96	1.071	54	40	45
ND2417-6	254	96	1.065	64	10	20
ND2471-8	226	93	1.079	56	80	80
NDA2031-2	192	82	1.072	64	80	80
NDO1496-1	224	90	1.082	67	100	80
NYE11-45	230	93	1.068	--	80	80
location means:	211	94	1.072	58	44	65

NEW JERSEY

Melvin R. Henninger

Introduction

Trials were conducted at the Rutgers Research & Development Center in Upper Deerfield Township and The Snyder Research & Extension Farm near Pittstown. All plots were 21' long and 3' wide. Seedpieces were spaced at 9" for round types and 12" for long types. At the Upper Deerfield site, 200 lbs./A of 0-0-60 and 500 lbs./A of 10-10-10 was broadcast and disked-in before planting on 3/30. Dual and sencor were applied 15 days after planting. An additional 100 lbs./A nitrogen was topdressed 5 weeks after planting. At the Snyder Farm 1500 lbs./A of 15-15-15 was broadcast and disked-in before planting on 4/18. Dual and sencor were applied immediately after planting.

The Upper Deerfield plots were harvested on 8/15 with a single-row mount commercial harvester modified for bagging. No attempt was made to recover any lost tubers caused by normal harvester operation. All plots were sized with a spool sizer and specific gravities were determined by the weight in air and water method. Chip color was determined by Mr. Steve Molnar of Wise Foods five and ten days after harvest.

The Snyder Farm plots were harvested on 9/22 with a single-row commercial potato digger. Round type were sized with a spool sizer, the long types were sized by weight, and specific gravities were determined by the weight in air and water method.

In 1995, planting was early and growing conditions were excellent during April, May, and June. July and August were hotter and drier than normal. Rainfall was supplemented by irrigations. Growth through-out the season was good. Heat sprouts, second growth, and internal heat necrosis were the major problems.

Colorado potato beetles were not a problem this season but controls were needed. Late blight was present at the Upper Deerfield Site. Other insects and diseases were not a problem and did not limit growth.

To simplify above information, trade names of some products are used. No endorsement is intended, nor is criticism implied of similar products not named.

NJ Variety Table 1.

Yields, Specific Gravities, and Tuber Sizes for 24 Round White Potato Varieties, Harvested Main Season and Grown on a Sandy Loam Soil at the Rutgers Research & Development Center - Upper Deerfield, NJ - 1995.

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield		Spec. Grav.	% Over			% Culls	% Tuber Sizes (2)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
Atlantic	ne	591	540	142	1.071	96	60	5	5	4	35	41	19	1
Snowden	ne	517	488	128	1.075	95	51	1	1	5	44	38	12	0
ND2417-6	ne	522	474	124	1.065	94	56	3	3	6	38	43	13	0
NY87	ne	501	472	124	1.066	96	62	2	2	4	34	46	16	0
AF875-15	ne	538	457	120	1.073	95	61	11	11	5	34	41	20	0
NY84	ct	497	455	119	1.053	95	71	4	4	5	24	36	34	1
B0257-12	ne	517	453	119	1.069	95	60	9	9	5	36	41	19	0
ND2471-8	ne	493	449	118	1.074	96	60	4	4	4	36	48	12	0
MN12823	ne	516	429	113	1.065	90	48	8	8	10	42	33	15	0
W870	ne	464	424	111	1.080	96	53	4	4	4	42	44	10	0
B0178-34	ne	505	423	111	1.080	96	68	14	14	4	28	41	26	1
Katahdin	ne	453	406	106	1.059	93	60	5	5	7	34	43	16	1
AF1424-6	ne	410	397	104	1.063	99	89	2	2	1	11	26	58	5
B0564-8	ne	501	388	102	1.064	89	38	14	14	11	51	31	7	0
Superior	ne	428	381	100	1.062	97	54	8	8	3	43	43	10	0
B0564-9	ne	462	373	98	1.062	94	59	14	14	6	34	42	16	2
Chipeta	ne	510	361	95	1.070	96	77	27	27	4	20	44	32	1
AF1475-16	ne	398	361	95	1.061	97	60	6	6	3	36	43	17	0
AF1438-5	ne	427	355	93	1.050	90	42	8	8	10	49	33	9	0
B0585-5	ne	401	351	92	1.061	97	79	9	9	3	19	47	30	1
AF1470-18	ne	415	335	88	1.056	90	36	10	10	10	54	27	9	0
AF1438-4	ne	383	328	86	1.053	92	40	7	7	8	52	34	5	0
AF1455-9	ne	418	323	85	1.065	84	29	8	8	16	55	25	4	0
AF1379-3	ne	433	314	82	1.064	77	22	6	6	23	55	16	5	0
CV (3)		13	17		.32	5	21							
W-D Bayes LSD.05		98	104		.004	6	16			6	11	13	10	ns

(1) ct = Certified Seed, ne = Northeast Regional Project.

(2) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(3) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 2. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1995 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER	Comments				
	A	P	M	S	S	C	T	x	h	p	A	S	G	C	S	H	H			N	R		
Atlantic	6	6	6	6	6	7	6	6	2	8	8	7	9	8	8				36	5	std	5	bad heat nec.
Snowden	7	6	7	3	6	6	6	6	2	8	8	8	8	9	9	9			14	6	yes	5	heat necrosis
ND2417-6	6	5	5	6	8	8	9	9	2	7	7	8	9	7	7			0			ok	4	so-so
NY 87	4	5	4	5	8	8	7	7	2	7	8	8	9	9	9			1	8		yes	4	y+
AF 875-15	4	3	3	6	8	8	7	7	2	5	6	5	7	6				0			yes	5	sg hs
NY 84	6	5	6	3	8	8	8	8	2	5	6	7	8	7	7			0			ok	6	app rot
B0257-12	5	5	4	5	8	8	7	7	3	8	7	7	7	6	7			3	7		yes	5	
ND2471-8	5	5	5	4	8	8	8	8	2	6	8	7	9	8	7			0			yes	4	scab
MN 12823	5	4	5	3	9	9	8	8	6	5	4	7	9	7	7	1		2	6		no	6	poor appearance
W 870	7	6	7	4	8	8	8	8	2	3	7	7	9	7	7			0			ok	5	flat
B0178-34	6	5	5	3	8	8	8	8	2	5	6	6	9	7	7			10	6		yes	5	sg hn
Katahdin	7	7	7	3	8	8	8	8	2	5	7	7	9	7	7			1	8		std	6	green
AF1424- 1	5	5	3	2	8	8	7	6	5	5	7	9	9	9	9			0			yes	5	early fm
B0564-8	4	5	4	8	7	7	6	6	2	8	8	5	9	7	7			0			no	4	sg size
Superior	5	5	3	8	7	7	6	6	3	7	7	6	8	7	7			0			std	6	
B0564-9	4	4	3	7	7	7	6	6	1	8	8	5	9	6				3	7		no	5	sg hs scab
AF1475-16	3	3	2	5	9	9	8	8	3	5	7	9	7	7	7			1	8		no	6	y gc hs
Chipeta	7	6	7	2	8	8	7	7	3	6	7	5	9	2				2	7		no	4	sg hs
AF1438- 5	3	4	3	6	7	7	6	6	2	8	8	7	9	7	7			2	8		no	6	
B0585-5	4	4	3	5	8	8	7	7	2	6	7	9	7	9	9			0			no	4	y gc gr
AF1470-18	4	7	4	2	9	9	8	8	2	6	7	9	6	9				0			no	6	GC scab
AF1438- 4	2	5	2	6	8	8	8	8	2	6	7	7	8	6				1	8		no	6	heat sprouts
AF1455- 9	8	6	8	7	8	8	7	7	2	7	7	5	9	6				2	6		no	4	SG HS
AF1379- 3	5	4	4	3	8	8	7	7	6	5	5	6	9	6				1	8		no	6	app y

(1) See NJ Rating Table for plant and tuber characters, tuber defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 3.

Yields, Specific Gravities, and Tuber Sizes for 24 Round White Potato Varieties, Harvested Main Season and Grown on a Sandy Loam Soil at the Rutgers Research & Development Center - Upper Deerfield, NJ - 1995.

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (2)				
			cwt/a	% of Sup.		1 7/8	2 1/2	3		1	2	3	4	5
Atlantic	ne	524	491	135	1.076	96	61		2	4	34	37	24	0
B0856- 4	cf	489	463	127	1.058	96	63		1	4	33	40	23	0
B0766- 3	cf	493	460	126	1.071	98	70		4	2	28	42	26	2
AF1060- 2	me	580	456	125	1.067	92	52		14	8	39	38	13	1
ND2471- 6	ne	486	434	119	1.065	95	63		6	5	32	44	19	0
AF1656- 4	me	466	429	118	1.068	97	74		5	3	23	55	19	0
B0892- 7	cf	492	429	117	1.077	95	46		8	5	49	40	6	0
B1032- 3	cf	430	416	114	1.071	98	84		1	2	14	38	44	2
B0684- 5	cf	437	415	114	1.058	97	74		2	3	23	46	28	0
NY 103	ny	438	412	113	1.060	97	63		3	3	33	50	13	0
AF1569- 2	me	435	403	111	1.061	93	52		1	7	41	41	11	0
AF1426- 6	ne	433	402	110	1.066	98	75		5	2	22	55	20	0
NY 105	ny	417	396	109	1.068	96	63		1	4	33	49	14	0
AF1433- 4	me	453	391	107	1.060	95	63		9	5	32	36	26	1
B0717- 1	cf	449	384	105	1.073	87	31		2	13	56	28	3	0
AF1569- 3	me	420	383	105	1.061	94	44		3	6	49	37	6	1
Superior	ne	401	365	100	1.066	96	48		5	4	47	45	3	0
NY E55-44	ct	378	365	100	1.070	97	48		0	3	49	43	4	0
NY M 19- 3	ny	380	361	99	1.060	96	53		1	4	43	44	9	0
AF1668-60	me	370	352	97	1.066	96	56		1	4	40	50	6	0
B0763-15	cf	447	330	90	1.069	95	71		23	5	24	40	31	0
B0887- 5	cf	337	325	89	1.065	98	76		1	2	22	52	24	0
AF1658- 5	me	383	318	87	1.070	96	60		14	4	37	43	17	0
B1191- 2	cf	290	265	73	1.057	93	46		2	7	47	33	12	1
CV (3)		12	12		.838	2	14							
W-D Bayes LSD.05		76	68		.004	2	11		4	2	10	11	9	ns

- (1) ct= Cert., cf= USDA Chapman Farm, me= Univ. of Maine, ne= NE Regional Project, ny= New York.
 (2) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.
 (3) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 4. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1995 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER		Comments	
	A	P	M	S	S	C	T	S	D	A	S	G	C	S	H	H	N	R	ALL		CC
Atlantic	7	6	6	7	7	7	6	2	8	8	9	9	9	9	2	22	6	std	3	hn	
B0856- 4	3	5	6	5	8	7	7	2	5	6	7	9	9	9	1	0		yes	6		
B0766- 3	6	6	6	5	7	6	6	2	8	8	8	8	8	9	3	1	8	yes	3		
Mainestay	7	5	8	5	9	8	8	2	6	7	4	9	8	8	0	0		ok	8	sg culls	
ND2471-6	5	6	6	7	8	8	8	3	7	7	7	7	9	8	0	0		yes	3		
AF1656- 4	7	7	7	7	8	8	8	4	7	7	9	9	9	7	1	0		yes	5		
B0892- 7	5	6	7	5	8	8	8	2	6	7	5	9	9	5	1	0		no	5	sg hs	
B1032- 3	7	7	8	4	8	7	7	2	6	8	9	9	9	9	2	0		yes	4	late	
B0684- 5	4	4	3	3	8	8	8	3	6	7	7	9	7	7	0	0		ok	5	sg hs	
NY103	5	5	6	7	8	7	7	2	5	7	9	9	9	9	1	0		ok	5		
AF1569- 2	4	6	5	5	8	7	7	2	7	8	8	9	9	9	1	0		ok	3	some tuber rot	
AF1426- 1	6	5	7	2	8	8	8	7	7	6	9	8	9	9	0	0		yes	4	long tuber late	
NY 105	6	6	7	3	8	8	8	5	5	6	9	9	9	9	0	0		yes	3	oblong	
B0717- 1	5	5	7	6	7	6	6	2	6	7	7	9	7	7	4	0		ok	3		
AF1569- 3	4	6	6	7	8	7	7	3	6	7	9	9	9	9	0	0		no	7	tuber rot	
AF1433- 4	5	5	5	5	8	7	7	3	5	7	8	9	9	5	1	0		no	3	hs green	
Superior	3	5	4	8	7	6	6	3	7	7	7	8	7	6	0	0		std	6	hs	
Andover	5	5	5	8	8	7	7	2	7	8	9	9	9	9	0	0		ok	3		
NY M19- 3	5	5	5	6	8	8	8	3	6	7	9	9	9	6	0	2	7	no	4	hs	
AF1668-60	6	7	8	3	8	7	7	2	6	7	9	9	9	9	0	0		no	3		
B0763-15	6	7	8	7	8	7	7	2	6	6	7	9	9	3	0	0		no	3	hs	
B0887- 5	4	4	4	3	8	7	7	2	8	8	9	9	9	9	0	0		no	3		
AF1658- 5	8	7	8	7	8	8	8	4	8	7	7	9	9	6	0	1	6	no	7	hs	
B1191- 2	2	6	6	5	8	8	8	2	5	6	9	9	9	9	0	0		no	4	poor yield	

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.
 (2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 5.

Yields, Specific Gravities, and Tuber Sizes for 20 Round White Potato Varieties, Harvested Late Season and Grown on a Sandy Loam Soil at the Rutgers Research & Development Center - Upper Deerfield, NJ - 1995.

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (2)					
			cwt/a	% of Sup.		1	7/8	2		1/2	1	2	3	4	5
Atlantic	ne	653	611	197	1.076	96	64	2	4	32	42	21	1		
Snowden	ne	572	540	174	1.083	95	52	1	5	44	40	12	0		
ND2471-8	ne	552	507	163	1.075	97	63	5	3	34	50	13	0		
NY84	ct	516	474	153	1.057	93	57	1	7	35	37	20	0		
B0257-12	cf	525	458	148	1.072	96	65	10	4	31	48	17	0		
AF875-15	ne	506	448	145	1.076	95	54	7	5	42	41	13	0		
W870	ne	468	440	142	1.086	96	60	2	4	36	47	13	0		
B0174-16	cf	491	433	140	1.078	94	65	6	6	30	44	21	0		
St. Johns	ne	467	429	138	1.064	95	56	4	5	38	47	9	0		
AF1060-2	me	521	427	138	1.063	88	51	7	12	38	39	11	1		
B0257-12	cf	459	420	135	1.073	98	72	7	2	25	48	24	0		
Atlantic-WF	ct	457	406	131	1.074	96	64	7	4	31	40	23	1		
B0564-9	cf	464	392	126	1.063	94	69	9	6	25	39	29	1		
B0178-34	ne	438	388	125	1.083	94	62	6	6	33	45	17	0		
B0564-8	cf	475	384	124	1.067	92	43	12	8	49	35	8	0		
Norwis	ct	395	378	122	1.057	97	77	2	3	21	50	27	0		
NY87	ne	385	363	117	1.068	95	50	1	5	46	42	8	0		
Chipeta	ne	443	336	108	1.067	94	74	20	6	21	44	30	0		
B0585-5	cf	331	311	100	1.067	97	63	3	3	34	49	14	0		
Superior	ne	344	310	100	1.064	94	39	4	6	55	35	5	0		
CV (3)		14	15		.29	2	14								
W-D Bayes	LS0.05	91	87		.004	2	12	6	2	10	14	9	ns		

(1) ct = Certified Seed, cf = USDA Chapman Farm, me = Univ. of Maine, ne = NE Regional Project.

(2) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(3) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 6. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1995 (1).

Variety	PLANT				TUBER CHARACTERS							TUBER DEFECTS							OVER		Comments		
	A	P	A	P	M	S	S	C	T	S	D	A	S	G	C	S	H	H	N	R		ALL	CC
Atlantic	6	6			6	5	7	6	2	8	8	8	7	9	9	9	0	3	6	4	std	5	hn sg
Snowden	7	7			7	4	7	5	2	6	7	8	9	9	9	9	1	2	0	6	yes	6	hn
ND2471-8	6	6			6	6	8	8	3	7	8	6	9	9	9	9	2	0			yes	5	sg scab
NY 84	7	7			7	3	8	8	2	5	6	9	9	9	9	0	1	8			yes	5	late
B0257-12	7	6			6	6	7	7	5	6	7	7	8	6	6	0	5	7			yes	8	hs
AF 875-15	4	4			4	6	8	7	3	6	7	7	6	8	7	7	2	0			yes	5	
W 870	6	6			6	4	8	8	2	2	6	6	7	9	7	7	0	4	6		yes	4	flat
B0174-16	6	6			5	2	8	7	3	6	5	5	5	6	6	5	4	7			ok	6	hh sg appearance
St. Johns	7	7			6	2	8	8	4	5	5	7	7	7	9	0	0				ok	7	appearance
B0257-12	6	6			5	5	7	7	5	6	7	7	6	7	6	0	5	7			yes	8	sg hs
Mainestay	7	6			6	3	8	8	2	8	7	7	4	8	9	9	0	2	7		no	9	sg
Atlantic-WF	6	6			6	5	6	5	3	5	7	8	9	9	9	4	3	8	5	yes	7	hn	
B0564- 9	4	5			3	7	7	6	3	7	7	3	9	9	6	4	2	7		yes	8	sg early	
B0178-34	6	6			6	5	8	8	2	5	7	6	9	9	6	3	7	7		yes	7	sg hs	
B0564- 8	6	6			5	8	7	6	2	8	8	3	9	9	7	0	0			ok	6	sg nice tubers	
Norwis	6	6			6	3	8	8	3	4	6	7	9	8	8	0	9	6		yes	4	hn	
NY 87	7	6			6	6	8	7	3	7	8	9	9	9	9	5	0			yes	4	hh	
Chipeta	8	8			8	2	8	7	3	6	4	2	8	4	4	0	5	8		no	6	sg hs app-	
B0585- 5	5	5			5	7	7	8	2	5	7	9	9	9	9	2	1	6		no	6	nice tubers	
Superior	5	5			3	9	7	6	2	6	6	7	8	6	6	1	0			std	7	hs	

(1) See NJ-Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 7.

Yields, Specific Gravities, and Tuber Sizes for 12 Russet Potato Varieties, Harvested Main Season and Grown on a Silt Loam Soil at the Snyder Research & Extension Farm - Pittstown, New Jersey - 1995.

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield % of Sup.	Spec. Grav.	% Over		% Culls	% Tuber Sizes (2)				
					4 oz	8 oz		1	2	3	4	5
Bakeking	ny	426	333	1.090	83	48	6	17	34	36	8	4
B9922-11 9"	cf	394	329	1.083	85	37	1	15	48	29	5	3
B9922-11	cf	355	319	1.082	91	51	2	9	41	35	12	4
Krantz	ne	355	313	1.078	89	62	1	11	27	40	16	6
Superior	ne	371	312	1.077	86	43	2	14	43	37	5	1
B0835-11	cf	338	281	1.076	88	53	5	12	34	36	16	1
Norkoth	ct	328	258	1.070	81	33	2	19	48	25	5	3
Goldrus	ne	376	249	1.075	75	26	12	25	49	21	4	1
Shepody	ct	403	236	1.082	81	46	28	19	35	23	14	8
Belrus	ne	303	224	1.083	78	30	8	22	48	24	6	0
AF1475-16	ne	277	217	1.076	84	29	6	16	55	27	2	0
Frontier	ct	338	216	1.082	71	23	10	29	48	19	4	1
CV (3)		12	16	.22	6	25						
W-D Bayes LSD.05		69	65	.003	7	15	8	7	12	13	9	ns

(1) ct = Certified Seed, cf = USDA Chapman Farm, ne = NE Regional Project, ny = New York.

(2) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.

(3) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 8.

Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown at the Snyder Research & Extension Farm Pittstown, New Jersey - 1995 (1).

Variety	PLANT			TUBER CHARACTERS								TUBER DEFECTS								OVER		Comments				
	A	A	P	M	S	S	C	T	X	h	p	D	A	p	G	S	G	C	S	H	H		N	R	ALL	Comments
Bake King	7	6		6	8	8	6	6		5	7	7		7		8	9	9	8		0				ok	scab
B9922-11	6	6	9"	7	9	9	5	2		7	5	6		6		9	9	9			13	6			ok+	hn
B9922-11	8	5		6	9	9	5	3		7	5	6		6		9	9	9			13	4			ok	hn
Krantz	6	6		7	9	9	6	6		5	6	6		6		8	9	9	8		0				ok+	
Superior	7	5		5	9	9	6	6		3	6	7		7		8	9	9	8		0				std	
B0835-11	6	4		5	9	9	5	4		6	6	6		6		8	9	9	7		0				yes	
Norkotah	6	4		6	9	9	5	3		8	7	8		8		9	9	9	9		0				yes	poor yield
Goldrus	7	4		5	9	9	5	4		8	5	5		5		6	7	6			0				no	sg hs
Shepody	7	6		7	8	8	8	8		7	5	5		5		5	9	6			0				no	sg hs
BelRus	6	5		6	9	9	4	2		7	5	7		7		7	9	8			11	6			no	hn
AF1475-16	5	4		4	8	8	7	6		7	6	6		6		9	7	9			0				ok	hn scab
Frontier	7	5		6	8	8	6	6		6	6	5		5		6	9	6			0				no	sg hs

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 9. Yields, Specific Gravities, and Tuber Sizes for 25 Russet Potato Varieties, Harvested Main Season and Grown on a Silt Loam Soil at the Snyder Research & Extension Farm - Pittstown, New Jersey - 1995.

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield % of Sup.	Spec. Grav.	% O v e r		% Culls	% Tuber Sizes (2)				
					4 oz	8 oz		1	2	3	4	5
B1409- 4	cf	519	422	124	1.099	-	-	-	-	-	-	-
AF1701- 3	me	486	396	117	--	73	14	6	22	41	23	9
B1389-17	cf	502	389	114	1.088	50	16	8	42	32	17	2
B1092-33	cf	483	369	108	1.097	20	7	18	61	18	2	0
B1401- 9	cf	369	344	101	--	-	-	-	-	-	-	-
B1004- 8	cf	413	344	101	1.081	41	2	16	43	30	7	4
B1419- 1	cf	393	338	99	1.074	73	5	9	18	39	27	6
B1157- 5	cf	454	335	98	1.065	31	3	24	45	31	0	0
B1402- 1	cf	429	328	96	1.086	69	15	10	21	29	23	16
B1401- 7	cf	389	317	93	1.079	47	6	14	39	31	12	4
B1409- 2	cf	380	313	92	1.088	43	4	14	44	36	5	2
B1403-13	cf	371	308	90	1.090	33	3	14	52	24	9	0
B1409- 3	cf	436	284	84	1.082	24	16	23	53	20	2	2
B1401- 5	cf	310	283	83	1.076	66	0	9	25	49	17	0
B1401- 1	cf	423	267	78	1.083	51	18	23	26	29	16	7
B1403-10	cf	366	266	78	1.081	53	14	15	32	43	9	0
B1348-24	cf	294	256	75	1.097	70	5	8	22	28	28	14
B1403-14	cf	395	203	60	1.084	8	16	39	53	8	0	0
B1419- 6	cf	353	196	58	1.078	29	13	36	35	27	2	0
B1380-13	cf	402	193	57	1.067	48	41	19	33	27	14	7
B1403-17	cf	422	183	54	1.075	25	35	33	42	19	6	0
B1402- 2	cf	285	169	50	1.081	26	11	33	41	26	0	0
B1358-14	cf	259	165	48	1.080	2	2	35	63	2	0	0
B1419-10	cf	331	128	38	1.071	30	49	24	46	26	4	0
B1403-16	cf	301	111	33	1.083	8	20	54	38	8	0	0

(1) cf = USDA Chapman Farm, me = University of Maine.

(2) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.

NJ Variety Table 10.

Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown at the Snyder Research & Extension Farm Pittstown, New Jersey - 1995 (1).

Variety	PLANT			TUBER CHARACTERS						TUBER DEFECTS						OVER		Comments						
	A	A	P	M	S	S	C	T	S	h	p	D	A	S	G	H	H		N	R	ALL	CC		
B1409- 4	9	7		7	9	9	5	4	5	6	6	6	6	7	7	9	0	4	6		no	hn		
AF1701- 3	7	6		5	9	9	6	5	7	5	6	6	6	7	7	9	0	0			yes	good	yield+size	
B1389-17	9	8		7	8	6	6	6	6	7	5	7	5	4	9	9	0	0			ok	sg		
B1092-33	8	7		7	8	6	6	5	5	6	7	7	7	6	9	9	0	2	6		yes	hn		
B1401- 9	7	3		3	9	5	5	3	7	6	7	6	7	8	9	8	0	0			yes			
B1004- 8	7	6		6	8	5	5	3	6	5	7	7	7	9	8	7	0	0			yes			
B1419- 1	7	6		6	8	7	7	6	8	5	5	5	5	7	9	6	0	0			no	app-		
B1157- 5	6	4		2	8	8	8	8	5	6	7	6	7	7	9	5	0	0			no	hs		
B1402- 1	8	8		7	9	5	5	3	8	6	5	6	5	6	9	9	0	0			ok+	big	ugly	
B1401- 7	6	5		6	9	5	5	4	6	4	6	6	6	7	9	8	0	1	6		no			
B1409- 2	6	7		7	9	5	5	4	6	3	5	5	5	8	9	9	0	1	7		ok-			
B1403-13	6	5		6	8	6	6	5	7	6	6	6	6	8	9	7	0	2	6		ok-	hn	green	
B1409- 3	8	6		4	9	7	7	6	7	5	5	5	5	2	9	3	0	1	6		no	hs	sg	
B1401- 5	6	7		7	9	5	5	4	7	7	8	7	8	9	9	9	0	0			yes	nice		
B1401- 1	8	7		8	9	7	7	6	7	6	5	6	5	5	9	6	0	3	5		no	sg	hs	hn
B1403-10	7	2		5	9	6	6	5	7	6	7	6	7	7	9	5	0	2	5		no	hs	hn	
B1348-24	6	5		6	8	6	6	5	7	6	5	6	5	7	9	7	0	0			no	poor	appearance	
B1403-14	7	7		9	9	7	7	7	8	7	5	7	5	3	9	2	0	0			no	sg	hn	
B1419- 6	6	6		6	9	6	5	3	3	6	6	6	6	5	9	5	0	5	5		no	hn	sg	hs
B1380-13	6	7		7	8	9	9	9	9	7	2	7	2	2	9	9	0	0			no	sg		
B1403-17	6	6		5	9	7	7	7	6	3	6	6	6	3	9	3	0	0			no	sg	hs	
B1402- 2	6	4		6	9	5	5	4	8	6	5	6	5	6	9	8	0	0			no	poor	appearance	
B1358-14	6	5		6	9	6	6	6	5	6	6	6	6	7	9	9	1	0			ok+			
B1419-10	7	4		2	9	7	7	6	7	6	4	7	6	2	9	5	0	0			no	sg	hs	
B1403-16	6	8		9	8	7	7	6	9	7	2	7	2	1	9	1	0	0			no	sg	hs	

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 10. HN = No. of Heat Necrosis tubers out of 10.

NJ Variety Table 11.

Yields, Specific Gravities, and Tuber Sizes for 13 Specialty Potato Varieties, Harvested Main Season and Grown on a Silt Loam Soil at the Snyder Research & Extension Farm - Pittstown, New Jersey - 1995.

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber				Sizes (2)	
			cwt/a	% of Sup.		1 7/8	2	1 1/2		1	2	3	4	5	
B0903- 2	cf	554	476	130	1.079	92	44		6	8	48	38	6	0	
B0967-11	cf	469	435	119	1.080	97	58		4	3	38	47	11	0	
B1004- 8	cf	425	395	108	1.081	98	72		5	2	26	53	19	0	
Superior	ne	382	365	100	1.079	96	52		1	4	44	42	10	0	
Chieftain	ct	389	357	98	1.069	94	42		2	6	52	38	3	0	
B0835-11	cf	370	353	97	1.082	96	54		0	4	41	46	9	0	
NorDonna	ne	387	306	84	1.059	82	20		3	18	62	18	2	0	
Ruby Red	ne	334	296	81	1.068	90	22		1	10	68	22	0	0	
Cherry Red	ne	308	288	79	1.080	94	47		0	6	47	42	5	0	
B0811-13	cf	314	284	78	1.072	93	59		3	7	34	46	13	0	
DR Norland	ne	307	278	76	1.063	94	38		3	6	56	33	5	0	
Yukon Gold	ne	291	269	74	1.079	94	59		1	6	35	47	11	1	
NY N40- 2	ny	426	124	34	1.072	39	1		26	61	38	1	0	0	
CV (3)		9	10		.179	3	10								
W-D Bayes LSD.05		29	30		.002	2	4		2	2	4	4	3	ns	

(1) ct = Certified Seed, cf USDA Chapman Field, ne = Northeast Regional Project, ny = Cornell.
 (2) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.
 (3) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 12.

Plant and Tuber Characters, Tuber Defects, and Overall Rating
for Varieties and Seedlings Grown at the Snyder Research & Extension Farm
Pittstown, New Jersey - 1995 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER ALL	Comments		
	A	P	p	M	S	S	C	T	S	D	A	S	G	H	S	H	H			N	R
B0903- 2	8	6		7	8	8	1	7	4	6	6	5	9	6	1	1	5	no	sg purple		
B0967-11	7	4		7	6	6	1	6	5	6	7	7	7	7	0	0		yes	nice purple		
B1004- 8	6	4		6	8	2	2	7	3	8	7	7	8	7	0	0		yes	nice red		
Superior	7	6		6	9	7	7	6	3	5	5	9	9	9	0	0		std			
Chieftain	7	4		6	9	9	2	7	3	6	7	7	8	7	0	25	4	no	hn		
B0852- 7	7	4		6	8	1	7	7	3	5	7	8	9	9	0	0		yes	nice purple color		
NorDonna	6	6		7	6	2	2	7	2	7	7	5	9	7	0	0		yes	sg good red		
Ruby Red	7	6		7	9	2	2	5	2	6	7	6	8	9	0	0		ok-	nice red too netted		
Cherry Red	8	5		5	9	2	2	6	3	7	7	9	9	7	0	0		ok+	nice red		
B0811-13	5	3		3	8	2	2	5	2	8	6	5	9	9	2	1	6	ok+	red yel flesh netted		
Norland DR	6	1		2	8	2	2	8	3	7	7	7	8	6	0	0		std	nice red hs		
Yukon Gold	6	3		4	9	8	8	8	2	6	7	7	9	8	0	0		yes	yellow flesh		
NY N40- 2	7	8		8	9	2	2	6	8	7	2	2	9	6	0	0		no	sg hs		

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 13.

Yields, Specific Gravities, and Tuber Sizes for 7 Specialty and 11 White Potato Varieties, Harvested Main Season and Grown on a Silt Loam Soil at the Snyder Research & Extension Farm - Pittstown, New Jersey - 1995.

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield cwt/a	Yield % of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (2)					
						1	7/8	2 1/2		1	2	3	4	5	
Specialty															
B1383-13	cf	429	343	106	1.078	97	71	18	3	26	60	12	0	0	
NY N40-1	ny	414	342	105	1.078	90	15	9	10	75	14	1	0	0	
B1102-3	cf	259	214	66	1.081	83	11	0	17	72	11	0	0	0	
All Blue	ct	304	199	61	1.071	70	12	7	30	58	12	0	0	0	
B1102-6	cf	255	198	61	1.067	83	29	6	17	54	27	2	0	0	
NY M252-1	ny	236	167	51	1.053	75	4	6	25	71	4	0	0	0	
W90DH54-2	me	53	11	3	--	21	0	0	79	21	0	0	0	0	
Round White															
Mainestay	me	577	517	159	1.079	90	45	0	10	45	38	6	0	0	
B0257-12	cf	458	440	135	1.084	97	64	0	3	33	50	14	0	0	
NY 84	ct	451	391	120	1.076	87	55	1	13	32	33	14	8	0	
Atlantic	ne	489	362	111	1.095	75	51	1	25	24	24	20	6	0	
AF 875-15	me	372	357	110	1.089	96	43	0	4	52	41	3	0	0	
NY 87	ct	409	346	107	1.080	85	28	0	15	57	28	0	0	0	
ND 2471-8	ne	442	315	97	1.091	72	23	1	28	49	16	7	0	0	
Atlantic WF	ct	337	281	87	1.095	84	57	0	16	27	47	9	0	0	
NY L235-4	ny	319	271	83	1.083	90	38	6	10	53	36	2	0	0	
B0178-34	ct	405	232	71	1.089	65	29	13	35	37	26	3	0	0	
Andover	ct	346	194	60	1.085	56	9	0	44	47	9	0	0	0	

(1) ct= Certified Seed, cf= USDA Chapman Farm, ne= NE Regional Project, ny= New York, me= Maine.

(2) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

NJ Variety Table 14. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown at the Snyder Research & Extension Farm Pittstown, New Jersey - 1995 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER		Comments		
	A	A	p	M	S	S	C	T	S	h	D	A	S	G	H	H	H	N	R		ALL	
B1383-13	7	8		7	6		2	7	7	5	5		3	9	9		0	0			no	sg
NY N40- 1	8	8		8	9		1	6	7	6	6		6	9	8		0	0			no	purple flesh
B1102- 3	6	2		2	9		2	6	2	8	7		9	9	9		0	0			ok+	
B1102- 6	6	2		7	9		2	5	3	6	6		9	5	6		0	0			no	hs
All Blue	7	4		6	7		1	8	8	6	4		6	9	9		0	0			ok	purple flesh
NY M252-1	5	2		3	7		1	8	7	5	5		7	9	8		0	0			no	dark purple flesh
W90DH54-2	3	1		1	9		2	7	2	7	7		9	9	5		0	0			no	hs

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 10. HN = No. of Heat Necrosis tubers out of 10.

NJ Variety Table 15.

Yields, Specific Gravities, and Tuber Sizes for 341 Round White Potato Varieties, Harvested Main Season and Grown on a Sandy Loam Soil at the Rutgers Research & Development Center - Upper Deerfield, NJ - 1995.

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (2)				
						% O v e r				% Tuber Sizes (2)				
						1	7/8	2 1/2		1	2	3	4	5
AF1527-3	me	328	297	83	-	91	25	25	0	9	66	22	2	0
AF1556-3	me	394	376	105	1.075	95	65	65	1	3	31	56	9	0
AF1556-14	me	336	299	83	-	89	55	55	6	6	34	42	13	0
AF1569-2	me	419	386	108	1.064	92	48	48	0	8	44	40	8	0
AF1570-1	me	298	281	78	-	94	56	56	3	2	39	48	8	0
AF1606-2	me	357	316	88	-	89	28	28	2	9	60	28	0	0
AF1609-1	me	487	440	123	1.064	90	75	75	6	4	15	57	18	0
AF1612-20	me	409	396	111	1.069	97	50	50	2	2	47	37	14	0
AF1706-25	me	252	209	58	-	83	28	28	4	13	55	28	0	0
AF1713-1	me	339	308	86	-	91	33	33	3	7	57	33	0	0
AF1714-2	me	433	415	116	1.069	96	63	63	2	2	32	45	18	0
AF1717-2	me	422	378	106	-	90	43	43	6	4	46	37	7	0
B1065-51	cf	444	422	118	1.065	95	69	69	2	3	26	48	21	0
B1066-23	cf	442	368	103	1.061	83	46	46	10	7	38	38	8	0
B1066-36	cf	402	296	83	-	74	39	39	20	7	35	38	1	0
B1066-73	cf	581	502	140	1.071	86	61	61	9	5	26	47	14	0
B1067-4	cf	293	235	66	-	80	18	18	6	14	62	18	0	0
B1067-11	cf	445	421	118	1.057	95	76	76	2	3	19	31	45	0
B1067-12	cf	434	383	107	1.067	88	54	54	7	4	34	43	11	0
B1068-39	cf	507	462	129	1.078	91	54	54	3	6	38	43	10	0
B1068-78	cf	432	347	97	-	80	30	30	2	18	50	25	5	0
B1069-17	cf	376	222	62	-	59	10	10	22	19	49	10	0	0
B1069-55	cf	366	295	82	-	81	7	7	5	14	74	6	1	0
B1070-81	cf	475	375	105	-	79	20	20	8	13	59	19	1	0
B1071-20	cf	485	445	124	1.065	92	27	27	2	7	64	27	0	0
B1072-9	cf	301	257	72	-	85	28	28	1	14	57	24	4	0
B1072-21	cf	405	385	108	1.064	95	82	82	3	2	13	47	35	0
B1074-25	cf	435	331	93	-	76	50	50	18	6	26	36	14	0
B1075-26	cf	321	287	80	1.071	89	33	33	1	10	57	33	0	0
B1080-20	cf	317	196	55	-	62	10	10	27	11	52	10	0	0
B1081-4	cf	508	445	124	1.080	88	43	43	7	5	45	35	8	0
B1083-15	cf	523	303	85	-	58	28	28	39	3	30	24	4	0
B1083-20	cf	441	324	90	-	73	48	48	23	4	25	46	2	0

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield % of Sup.	Spec. Grav.	% O v e r			Culls	% Tuber Sizes (2)					
					1	7/8	2 1/2		1	2	3	4	5	
B1083-33	cf	395	326	91	-	82	12	4	13	70	12	0	0	0
B1083-51	cf	469	452	126	1.069	96	66	0	4	30	49	17	0	0
B1084-45	cf	512	360	101	-	70	35	25	5	35	28	8	0	0
B1087-3	cf	300	204	57	-	68	6	16	16	62	6	0	0	0
B1088-36	cf	287	91	25	-	32	5	65	3	27	5	0	0	0
B1088-37	cf	456	447	125	1.058	98	75	0	2	23	53	22	0	0
B1089-42	cf	353	253	71	-	72	24	20	8	47	24	0	0	0
B1090-19	cf	439	395	110	1.075	90	58	6	4	31	51	7	0	0
B1091-29	cf	413	390	109	1.072	94	58	0	6	37	45	13	0	0
B1093-21	cf	395	360	100	1.075	91	51	3	6	40	47	3	0	0
B1093-46	cf	499	474	132	1.066	95	72	0	5	23	57	15	0	0
B1094-47	cf	411	367	103	1.065	89	61	3	7	28	38	24	0	0
B1094-80	cf	407	371	104	1.062	91	67	3	5	24	47	20	0	0
B1098-29	cf	290	248	69	-	85	60	12	3	26	42	18	0	0
B1098-30	cf	363	318	89	-	88	28	2	10	59	27	1	0	0
B1099-5	cf	367	257	72	-	70	45	24	6	25	33	13	0	0
B1101-62	cf	310	252	70	-	81	12	1	18	69	12	0	0	0
B1110-10	cf	407	387	108	1.073	95	63	1	4	32	34	30	0	0
B1110-11	cf	483	452	126	1.070	94	70	4	3	24	41	28	0	0
B1158-4	cf	301	292	82	1.058	97	81	2	1	16	48	33	0	0
B1158-11	cf	366	346	97	-	95	73	1	4	21	62	11	0	0
B1206-10	cf	407	384	107	1.063	95	62	1	4	32	54	8	0	0
B1207-15	cf	383	340	95	-	89	53	7	4	36	41	12	0	0
B1208-4	cf	499	445	124	-	89	54	3	8	36	35	18	0	0
B1208-16	cf	631	606	169	1.063	96	69	1	3	28	49	19	0	0
B1214-7	cf	451	416	116	1.078	92	68	6	2	24	52	16	0	0
B1216-3	cf	536	491	137	1.067	92	42	1	7	49	42	0	0	0
B1229-5	cf	505	385	108	-	76	47	20	4	29	39	8	0	0
B1229-16	cf	475	409	114	-	86	52	7	7	34	36	17	0	0
B1236-3	cf	405	377	105	1.071	93	65	4	3	28	39	24	2	2
B1236-5	cf	241	180	50	-	75	31	9	16	44	28	3	0	0
B1239-3	cf	371	356	99	1.068	96	80	2	1	16	29	51	0	0
B1240-1	cf	414	397	111	1.073	96	82	2	2	13	38	45	0	0
B1240-12	cf	340	324	90	1.066	95	54	0	5	41	43	11	0	0
B1240-14	cf	483	456	127	1.074	94	63	2	4	31	46	17	0	0

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (2)				
						% O v e r				1	2	3	4	5
						1	7/8	2 1/2						
B1248-5	cf	275	223	62	-	81	36	11	8	45	31	6	0	
B1248-5	cf	411	351	98	1.076	85	45	8	7	40	32	13	0	
B1250-3	cf	411	384	107	-	93	52	1	6	42	46	5	0	
B1250-3	cf	405	393	110	1.081	97	68	0	3	29	49	19	0	
B1255-5	cf	304	285	80	-	94	46	3	4	47	46	0	0	
B1255-9	cf	281	263	74	-	94	25	1	5	68	25	0	0	
B1255-14	cf	361	303	84	-	84	21	0	16	63	21	0	0	
B1265-1	cf	481	413	115	-	86	20	4	10	66	19	1	0	
B1273-5	cf	472	448	125	1.076	95	63	0	5	32	43	20	0	
B1275-2	cf	367	326	91	-	89	14	1	10	75	13	1	0	
B1275-3	cf	282	241	67	-	86	26	2	13	60	26	0	0	
B1279-4	cf	439	410	115	1.071	93	56	2	5	38	48	8	0	
B1283-5	cf	417	355	99	-	85	24	4	10	62	24	0	0	
B1284-5	cf	219	210	59	-	96	63	0	4	32	34	29	0	
B1291-6	cf	382	354	99	-	93	88	6	1	4	24	65	0	
B1293-2	cf	375	351	98	1.067	94	38	1	5	55	36	2	0	
B1293-3	cf	380	364	102	1.065	96	55	2	2	41	51	3	0	
B1301-5	cf	0	0	0	-	0	0	0	0	0	0	0	0	
B1303-14	cf	483	428	120	1.060	89	80	10	2	8	26	45	10	
B1304-2	cf	256	234	65	-	91	36	2	7	56	29	6	0	
B1306-31	cf	439	297	83	-	68	20	18	14	48	19	0	0	
B1306-37	cf	267	195	54	-	73	3	1	26	70	3	0	0	
B1307-23	cf	546	479	134	1.066	88	61	10	3	27	44	17	0	
B1307-27	cf	380	248	69	-	65	33	31	4	32	28	5	0	
B1307-28	cf	499	438	122	1.070	88	41	3	9	46	36	6	0	
B1308-21	cf	427	323	90	-	76	22	11	13	54	20	2	0	
B1308-22	cf	642	571	160	-	89	68	9	2	21	52	16	0	
B1309-21	cf	385	252	70	-	65	16	5	29	49	16	0	0	
B1309-23	cf	440	415	116	-	94	49	1	5	45	42	8	0	
B1309-24	cf	537	402	112	-	75	35	16	9	40	27	8	0	
B1309-27	cf	426	402	112	1.076	94	60	0	6	35	52	7	0	
B1309-32	cf	367	325	91	-	89	35	1	11	53	35	0	0	
B1309-34	cf	431	360	100	-	83	16	4	13	67	15	1	0	
B1309-36	cf	474	421	118	1.077	89	27	4	8	62	27	0	0	
B1311-32	cf	490	401	112	-	82	28	10	8	54	28	1	0	

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber			Sizes (2)		
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5	
B1312-21	cf	334	254	71	-	76		10	0	24	66	9	2	0	
B1313-21	cf	368	166	46	-	45		31	51	4	14	16	15	0	
B1315-23	cf	452	407	114	1.077	90		65	4	6	25	34	31	0	
B1315-27	cf	452	402	112	1.078	89		69	7	4	20	31	38	0	
B1315-31	cf	563	500	140	1.068	89		56	8	3	33	44	12	0	
B1315-32	cf	312	283	79	1.066	91		57	4	5	33	40	18	0	
B1315-33	cf	460	380	106	-	83		30	6	12	53	23	6	0	
B1316-21	cf	422	349	98	-	83		13	2	15	70	12	1	0	
B1316-28	cf	490	387	108	-	79		29	8	13	50	28	1	0	
B1317-23	cf	434	370	103	-	85		25	5	10	60	24	1	0	
B1319-21	cf	434	322	90	-	74		42	19	7	32	29	13	0	
B1319-25	cf	422	357	100	-	85		43	9	7	42	35	7	0	
B1319-27	cf	335	266	74	-	79		62	16	5	18	41	21	0	
B1320-23	cf	522	454	127	1.074	87		47	6	7	40	40	7	0	
B1320-24	cf	478	352	98	-	74		51	24	2	23	35	14	2	
B1320-26	cf	573	377	105	-	66		17	25	10	48	14	3	0	
B1321-21	cf	545	498	139	1.068	91		64	4	4	28	40	23	0	
B1321-22	cf	586	540	151	1.077	92		55	3	5	37	40	14	1	
B1321-23	cf	382	339	95	-	89		37	1	11	52	27	11	0	
B1321-24	cf	436	384	107	1.067	88		36	6	6	52	27	9	0	
B1321-28	cf	290	269	75	-	93		32	0	7	61	27	4	0	
B1321-29	cf	385	318	89	-	83		3	0	17	80	3	0	0	
B1321-32	cf	466	422	118	1.075	91		55	3	6	35	45	11	0	
B1321-34	cf	456	420	117	-	92		43	0	7	49	42	1	0	
B1321-35	cf	440	352	98	1.060	80		40	14	6	40	28	12	0	
B1321-38	cf	375	351	98	1.069	94		47	2	4	47	44	3	0	
B1321-40	cf	418	368	103	-	88		27	3	9	61	25	2	0	
B1322-22	cf	463	422	118	1.072	91		41	1	8	50	30	11	0	
B1322-23	cf	492	424	118	1.058	86		52	9	4	34	37	15	0	
B1322-29	cf	414	389	109	1.068	94		64	2	4	30	51	12	0	
B1323-23	cf	439	337	94	-	77		41	18	6	36	34	7	0	
B1326-22	cf	382	335	93	-	88		25	0	12	62	25	0	0	
B1326-27	cf	395	323	90	-	82		30	5	13	52	28	2	0	
B1326-28	cf	325	274	76	-	84		17	4	11	67	17	0	0	
B1327-23	cf	358	289	81	-	81		3	1	18	78	3	0	0	

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (2)			
						1	7/8	2 1/2		1	2	3	4
B1328-22	cf	579	331	92	-	57		16	37	6	41	15	2
B1330-22	cf	440	366	102	-	83		22	7	10	61	22	0
B1331-22	cf	312	281	78	-	90		64	6	4	26	45	18
B1331-24	cf	462	360	100	-	78		46	18	4	31	31	15
B1332-21	cf	429	400	112	-	93		51	4	3	42	42	9
B1332-26	cf	437	342	95	-	78		30	18	4	49	30	0
B1332-29	cf	492	437	122	1.065	89		52	7	4	37	44	8
B1333-21	cf	516	481	134	1.062	93		60	2	5	33	42	18
B1333-22	cf	336	304	85	-	90		24	3	6	67	24	0
B1333-24	cf	490	448	125	-	92		33	0	8	59	26	7
B1333-26	cf	272	174	49	-	64		2	2	34	62	2	0
B1333-27	cf	424	348	97	-	82		16	4	14	66	16	0
B1336-23	cf	714	630	176	1.062	88		41	6	6	47	39	2
B1336-24	cf	337	270	76	-	80		30	10	9	50	25	6
B1336-30	cf	354	301	84	-	85		54	8	7	31	46	8
B1336-36	cf	363	328	92	-	90		25	1	9	66	25	0
B1337-22	cf	496	223	62	-	45		12	49	6	33	12	0
B1337-26	cf	327	248	69	-	76		7	8	16	69	7	0
B1337-29	cf	472	402	112	-	85		52	10	5	33	40	12
B1337-32	cf	453	335	93	-	74		39	20	6	35	33	7
B1337-33	cf	365	251	70	-	69		28	22	9	40	23	5
B1337-34	cf	455	203	57	-	45		2	44	12	43	2	0
B1338-23	cf	503	334	93	-	66		11	21	12	55	11	0
B1338-27	cf	449	340	95	-	76		12	10	15	64	11	1
B1339-22	cf	600	527	147	1.072	88		63	10	3	25	54	9
B1339-26	cf	596	546	153	1.073	92		47	2	6	45	37	10
B1339-27	cf	309	269	75	-	87		19	1	12	69	19	0
B1339-28	cf	310	280	78	-	90		37	2	8	53	37	0
B1339-29	cf	286	161	45	-	56		3	3	40	54	3	0
B1340-23	cf	483	341	95	-	71		18	20	9	52	16	2
B1342-21	cf	516	475	133	1.061	92		41	2	6	51	31	8
B1342-24	cf	273	249	69	-	91		22	0	9	69	22	0
B1343-18	cf	347	317	89	1.084	91		63	5	4	28	49	14
B1344-13	cf	487	374	104	-	77		26	12	11	51	17	8
B1344-14	cf	408	268	75	-	66		4	1	34	61	4	0

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (2)			
						1	7/8	2 1/2		1	2	3	4 5
B1344-18	cf	559	542	151	1.069	97		51	0	3	46	47	4 0
B1344-20	cf	410	382	107	-	93		27	1	6	66	22	5 0
B1344-21	cf	420	398	111	-	95		73	0	5	22	33	36 4
B1345-13	cf	473	362	101	-	77		52	19	5	25	23	21 9
B1345-14	cf	476	426	119	-	89		36	3	8	53	28	9 0
B1345-18	cf	530	447	125	1.068	84		16	3	12	69	12	3 0
B1346-14	cf	380	347	97	1.069	91		70	7	1	22	33	32 4
B1346-15	cf	362	348	97	-	96		78	0	4	19	23	55 0
B1346-16	cf	629	560	156	1.067	89		49	3	8	40	46	3 0
B1346-17	cf	449	404	113	-	90		42	1	9	48	39	3 0
B1348-15	cf	331	290	81	-	87		40	4	8	48	40	0 0
B1348-18	cf	384	377	105	1.075	98		74	0	2	24	48	26 0
B1350-17	cf	492	443	124	-	90		43	1	9	47	35	9 0
B1350-20	cf	466	410	115	1.059	88		70	8	4	18	42	28 0
B1351-15	cf	460	367	103	1.085	80		56	17	3	23	29	26 2
B1351-16	cf	384	326	91	-	85		39	6	9	46	34	5 0
B1351-18	cf	391	308	86	-	79		42	17	5	37	33	8 0
B1352-13	cf	384	352	98	-	92		53	4	5	39	34	18 0
B1352-14	cf	379	207	58	-	55		26	39	7	28	25	1 0
B1352-16	cf	328	266	74	-	81		7	2	17	74	7	0 0
B1352-17	cf	241	128	36	-	53		2	9	38	51	2	0 0
B1352-18	cf	364	207	58	-	57		2	18	25	55	2	0 0
B1352-22	cf	469	302	84	-	64		16	29	7	49	15	1 0
B1352-24	cf	381	342	96	-	90		22	6	5	67	22	0 0
B1353-13	cf	308	251	70	-	82		9	4	15	73	9	0 0
B1353-14	cf	384	314	88	-	82		27	4	14	55	24	3 0
B1353-19	cf	382	326	91	-	86		34	4	11	51	34	0 0
B1353-22	cf	286	223	62	-	78		38	12	10	40	29	9 0
B1353-24	cf	393	348	97	-	89		51	5	6	38	48	3 0
B1354-18	cf	395	222	62	-	56		26	39	4	30	19	7 0
B1354-21	cf	400	319	89	-	80		25	6	14	55	25	0 0
B1354-25	cf	488	435	121	-	89		34	5	6	55	30	3 0
B1354-27	cf	345	213	59	-	62		12	23	16	49	12	0 0
B1354-29	cf	284	238	66	-	84		20	2	14	64	19	1 0
B1356-13	cf	346	335	94	1.088	97		67	1	2	30	59	7 0

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber			Sizes (2)		
						1	7/8	2 1/2		1	2	3	4	5	
B1356-20	cf	423	265	74	-	63	23	31	6	40	19	3	0		
B1356-21	cf	493	368	103	-	75	20	17	8	55	20	0	0		
B1357-16	cf	337	287	80	-	85	56	13	2	29	41	15	0		
B1357-18	cf	343	295	82	1.071	86	59	11	2	27	41	18	0		
B1357-19	cf	331	170	48	-	51	18	41	8	34	10	8	0		
B1357-22	cf	444	365	102	-	82	49	13	5	33	40	10	0		
B1357-23	cf	334	116	32	-	35	2	47	18	33	2	0	0		
B1358-19	cf	297	261	73	-	88	43	7	5	45	32	12	0		
B1360-13	cf	382	306	85	-	80	30	11	9	50	30	0	0		
B1360-14	cf	257	234	65	-	91	42	0	9	49	42	0	0		
B1360-15	cf	432	376	105	-	87	46	10	3	41	36	9	0		
B1360-16	cf	539	495	138	1.080	92	45	3	6	47	36	9	0		
B1361-13	cf	394	346	97	-	88	49	8	4	39	45	3	0		
B1361-15	cf	298	265	74	-	89	37	5	6	52	33	4	0		
B1361-18	cf	424	387	108	1.080	91	45	3	6	47	45	0	0		
B1361-19	cf	288	249	70	-	87	34	3	10	53	34	0	0		
B1362-14	cf	454	413	115	1.054	91	59	3	6	32	42	17	0		
B1363-17	cf	389	373	104	1.068	96	42	0	4	54	40	2	0		
B1364-15	cf	346	321	90	-	93	51	4	4	41	46	6	0		
B1364-17	cf	382	359	100	-	94	50	0	6	44	42	9	0		
B1364-19	cf	274	266	74	1.065	97	69	0	3	28	35	35	0		
B1366-14	cf	278	270	75	1.076	97	51	0	3	46	42	9	0		
B1366-15	cf	415	392	110	-	95	63	2	4	31	44	19	0		
B1368-13	cf	454	335	94	-	74	22	18	8	52	21	1	0		
B1368-16	cf	458	423	118	1.085	92	43	3	4	50	37	6	0		
B1369-14	cf	401	375	105	-	94	58	3	4	36	43	13	3		
B1369-15	cf	261	202	56	-	77	9	2	21	69	9	0	0		
B1369-16	cf	356	321	90	-	90	48	6	4	43	43	4	0		
B1370-14	cf	352	320	89	1.071	91	39	1	8	52	33	6	0		
B1375-14	cf	388	353	99	1.075	91	60	3	6	31	36	24	0		
B1375-15	cf	407	319	89	-	78	53	19	3	25	40	13	0		
B1375-17	cf	348	318	89	-	91	32	2	6	59	31	2	0		
B1378-13	cf	438	207	58	-	47	17	37	16	30	17	0	0		
B1384-13	cf	423	305	85	-	72	41	19	9	31	36	5	0		
B1384-15	cf	218	195	54	-	89	50	4	7	39	32	18	0		

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber			Sizes (2)		
						1	7/8	2 1/2		1	2	3	4	5	
B1385-16	cf	346	255	71	-	74		14	9	17	60	14	0	0	
B1394- 3	cf	322	168	47	-	52		20	39	9	32	17	3	0	
B1394- 4	cf	427	281	79	-	66		24	29	6	42	22	2	0	
B1395- 4	cf	430	243	68	-	56		5	29	15	52	5	0	0	
B1395- 5	cf	135	101	28	-	75		13	7	18	62	13	0	0	
B1396- 6	cf	384	316	88	-	82		47	14	4	35	37	10	0	
B1396-10	cf	409	328	92	1.057	80		55	15	4	26	47	7	0	
B1396-13	cf	422	260	73	-	62		55	36	2	7	27	28	0	
B1396-15	cf	400	308	86	-	77		15	13	10	62	8	7	0	
B1397- 4	cf	384	338	94	1.071	88		68	7	5	20	53	15	0	
B1398- 1	cf	551	405	113	-	74		48	23	3	26	25	23	0	
B1398- 4	cf	456	357	100	-	78		26	12	10	53	23	3	0	
B1398- 5	cf	563	431	120	-	77		51	14	9	25	47	4	0	
B1398- 7	cf	168	63	18	-	37		14	55	7	23	12	2	0	
B1399- 4	cf	624	534	149	1.069	86		75	11	3	11	30	43	2	
B1399- 8	cf	230	75	21	-	33		19	62	5	14	15	4	0	
B1400-10	cf	336	293	82	-	87		29	3	9	58	27	2	0	
B1401- 2	cf	355	311	87	-	88		48	7	5	39	41	7	0	
B1401- 3	cf	438	380	106	-	87		31	3	10	56	27	4	0	
B1402- 3	cf	416	252	70	-	61		11	28	11	49	11	0	0	
B1402- 4	cf	475	341	95	-	72		17	18	11	54	15	3	0	
B1402- 5	cf	421	244	68	-	58		24	27	15	34	16	8	0	
B1402-10	cf	396	277	77	-	70		12	4	26	58	12	0	0	
B1402-11	cf	409	304	85	-	74		12	4	22	62	12	0	0	
B1403- 3	cf	259	163	46	-	63		8	4	33	55	8	0	0	
B1406- 8	cf	211	193	54	-	91		47	3	5	45	31	11	5	
B1406- 9	cf	250	192	54	-	77		34	11	12	43	29	5	0	
B1406-10	cf	593	504	141	1.070	85		58	9	6	27	39	19	0	
B1406-11	cf	353	311	87	1.076	88		37	0	11	51	30	7	0	
B1406-12	cf	354	299	84	-	84		50	8	8	35	30	20	0	
B1407- 1	cf	428	391	109	1.080	91		43	1	8	48	42	1	0	
B1407- 2	cf	372	316	88	-	85		35	8	7	50	28	7	0	
B1407- 6	cf	245	209	58	-	85		16	0	15	69	13	3	0	
B1407- 7	cf	440	379	106	-	86		38	10	4	48	38	0	0	
B1407- 8	cf	451	425	119	1.080	94		65	3	3	29	38	26	0	

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield % of Sup.		Spec. Grav.	% O v e r			% Culls	% Tuber			Sizes (2)		
			cwt/a	cwt/a		1	7/8	2 1/2		1	2	3	4	5	
B1407-9	cf	323	283	79	1.075	88		50	1	11	37	37	13	0	
B1408-3	cf	494	474	132	1.077	96		72	1	4	24	34	39	0	
B1410-2	cf	151	85	24	-	56		0	3	41	56	0	0	0	
B1413-1	cf	478	359	100	1.071	75		50	22	3	25	36	14	0	
B1413-4	cf	419	382	107	1.078	91		60	5	3	31	39	21	0	
B1413-5	cf	289	274	77	-	95		80	2	3	15	52	28	0	
B1413-10	cf	484	447	125	1.067	92		69	4	3	23	58	11	0	
B1414-2	cf	299	253	71	1.064	85		52	10	5	33	36	16	0	
B1414-6	cf	508	494	138	1.078	97		85	1	2	12	39	46	0	
B1415-1	cf	297	269	75	-	90		43	3	6	47	37	6	0	
B1415-2	cf	328	295	82	-	90		73	7	3	16	19	53	2	
B1415-3	cf	273	255	71	-	93		37	2	5	56	30	7	0	
B1415-5	cf	428	402	112	1.076	94		52	1	5	42	48	4	0	
B1415-7	cf	408	397	111	1.070	97		74	0	3	23	36	38	0	
B1415-8	cf	408	375	105	1.080	92		59	2	6	33	50	9	0	
B1415-9	cf	433	362	101	-	84		35	7	10	49	29	5	0	
B1416-1	cf	554	441	123	1.079	80		21	5	15	58	18	3	0	
B1416-2	cf	543	468	131	1.080	86		66	9	5	20	35	31	0	
B1418-1	cf	314	273	76	-	87		34	1	12	53	27	8	0	
B1418-2	cf	494	449	125	1.068	91		51	4	5	40	35	16	0	
B1418-3	cf	444	408	114	1.070	92		46	2	6	46	41	5	0	
B1418-5	cf	407	367	103	1.070	90		49	1	8	41	41	8	0	
B1418-6	cf	260	222	62	-	85		30	6	9	56	25	5	0	
B1418-8	cf	378	268	75	-	71		10	7	22	61	10	0	0	
B1421-4	cf	384	357	100	-	93		45	2	5	48	41	5	0	
B1422-1	cf	460	271	76	-	59		35	38	3	24	27	7	0	
B1423-1	cf	444	389	109	-	88		34	3	9	53	30	5	0	
B1425-2	cf	709	581	162	1.075	82		48	14	4	34	35	13	0	
B1425-4	cf	436	402	112	1.086	92		66	3	4	26	39	27	0	
B1425-5	cf	428	389	109	1.077	91		53	1	8	38	40	12	0	
B1425-6	cf	414	369	103	1.063	89		48	6	5	41	41	7	0	
B1425-7	cf	496	425	119	1.085	86		36	5	9	50	34	2	0	
B1425-9	cf	664	629	176	1.083	95		68	1	4	27	41	25	2	
B1425-10	cf	353	308	86	-	87		50	7	6	38	39	11	0	
B1426-1	cf	583	535	149	-	92		58	3	5	34	43	14	0	

NJ Variety Table 15. (Continued).

Variety Name	Seed Source (1)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (2)				
						1	7/8	2 1/2		1	2	3	4	5
B1426-2	cf	503	351	98	-	70	57	26	4	13	22	35	0	
B1426-4	cf	292	230	64	-	79	48	13	8	31	36	11	0	
B1426-6	cf	384	298	83	-	78	23	13	10	54	21	3	0	
B1426-9	cf	400	367	103	-	92	45	1	8	47	36	9	0	
B1426-10	cf	485	428	120	-	88	42	5	6	46	31	12	0	
B1426-12	cf	351	197	55	-	56	28	40	4	28	26	3	0	
B1426-15	cf	413	315	88	-	76	42	16	7	34	35	7	0	
B1427-1	cf	539	505	141	1.064	94	65	2	4	28	26	40	0	
B1427-2	cf	490	227	64	-	46	21	46	8	25	18	3	0	
B1427-4	cf	523	456	127	1.080	87	59	10	3	28	35	24	0	
B1427-5	cf	549	458	128	1.079	84	61	12	4	23	44	17	0	
B1427-6	cf	262	202	56	-	77	57	18	4	20	29	25	3	
B1428-1	cf	442	411	115	1.071	93	47	0	7	46	44	3	0	
B1428-2	cf	573	523	146	1.078	91	61	3	6	31	36	25	0	
B1428-3	cf	384	297	83	-	77	34	3	19	44	28	5	0	
B1428-4	cf	476	438	122	1.086	92	64	3	5	28	38	26	0	
B1428-8	cf	490	418	117	1.086	85	35	2	13	50	28	7	0	
B1429-1	cf	523	478	133	-	91	46	2	6	46	33	13	0	
B1429-2	cf	409	382	107	-	93	65	3	4	29	47	18	0	
B1429-4	cf	347	241	67	-	69	41	26	4	28	31	10	0	
B1429-A1	cf	492	477	133	1.065	97	62	0	3	35	52	10	0	
B1429-A2	cf	500	464	130	1.073	93	68	3	4	24	42	24	2	
B1429-A3	cf	552	538	150	1.076	97	79	0	3	18	51	28	0	
B1429-A4	cf	384	357	100	1.063	93	71	5	2	22	47	25	0	
B1429-A5	cf	486	467	130	1.065	96	65	1	3	31	56	9	0	
B1429-A6	cf	333	279	78	1.065	84	44	9	7	40	35	9	0	

(1) cf = Chapman Farm, me = University of Maine.

(2) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

NJ Variety Table 16. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1995 (1).

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					OVER		Comments		
	A	A	P	M	S	C	T	CHARACTERS			S	TUBER			ALL			
								S	h	p		G	C	S			H	H
AF1527- 3	6	8	6	3	7	8	7	3	7	7	7	9	9	0	1	6	no size- hn?	
AF1556- 3	6	6	6	3	7	8	8	5	6	6	6	9	9	0	2	6	ok- hn?	
AF1556-14	6	8	7	6	8	8	8	2	7	6	6	7	8	7	0	1	7	y? hs? sg?
AF1569- 2	7	8	7	2	8	7	7	2	7	8	8	9	9	9	0	0	0	yes app+ early
AF1570- 1	7	8	7	2	5	8	7	4	5	6	7	9	7	9	0	0	0	no app- gr early
AF1606- 2	7	7	7	3	8	8	7	4	6	7	7	9	9	9	0	0	0	ok y? early
AF1609- 1	6	9	6	6	7	8	6	5	6	5	6	7	9	6	0	0	0	ok- app- hs
AF1612-20	7	8	7	6	4	8	8	3	6	6	6	8	9	9	0	0	0	ok+ ok ok
AF1706-25	1	8	7	8	7	8	9	3	7	6	6	9	9	9	0	0	0	no size- y-
AF1713- 1	5	6	2	2	7	7	6	5	6	5	5	8	9	9	0	0	0	no app- y- early
AF1714- 2	7	9	3	3	5	8	8	3	8	7	7	9	9	9	0	0	0	yes y+ early
AF1717- 2	7	7	7	2	5	9	8	7	7	4	4	8	8	7	0	0	0	ok- s- app- early
B1071-20	6	7	6	3	8	8	6	6	6	7	7	9	9	9	0	0	0	yes y+ early
B1072- 9	6	7	6	3	8	8	6	3	6	6	6	9	9	9	0	0	0	no y- size- LB-
B1072-21	5	6	9	5	5	8	7	3	8	7	7	8	9	9	0	0	0	yes size+
B1074-25	6	9	7	7	5	8	8	2	3	5	5	3	9	5	0	0	0	no sg hs app-
B1075-26	5	7	7	2	7	9	9	2	6	8	8	9	9	9	0	0	0	ok+ early y? LB-
B1080-20	7	8	7	7	8	8	8	2	8	7	7	6	9	2	0	0	0	no hs y-
B1081- 4	7	7	7	4	2	8	8	5	6	6	6	8	9	8	0	0	0	yes y+ size?
B1083-15	7	8	7	5	2	8	9	8	7	2	2	3	9	8	0	0	0	no sg app-
B1083-20	7	9	7	5	2	8	9	4	6	6	6	5	9	2	0	0	0	no hs sg y-

NJ Variety Table 16. Continued.

Variety	PLANT			TUBER CHARACTERS				TUBER DEFECTS				OVER ALL	Comments						
	A P		M	S	C	T	S	h	D	A	S			G	H	S	H	N	R
	p	p	t	S	S	l	x		p	p	G			C					
B1083-33	6	5	3	5	8	7	4	5	5	5	8	9	9	9	0	0	no	size- app- LB- early app?	
B1083-51	6	7	2	9	7	7	3	5	6	6	9	9	9	9	1	0	yes	hs	
B1084-45	7	8	5	7	8	7	2	6	6	6		9	2	0	0	no	sg size-		
B1087-3	4	7	5	9	8	7	4	7	7	7	3	9	6	0	0	no	hs sg		
B1088-36	7	9	8	7	7	6	2	8	7	7	2	9	2	0	0	no	y+ size- early		
B1088-37	5	6	2	9	8	7	2	6	7	6	9	9	9	0	0	yes	hs sg		
B1089-42	7	8	5	7	8	8	2	7	6	6	6	2	2	0	0	no	hs sg		
B1090-19	7	7	5	7	7	6	4	5	7	7	8	8	8	0	0	yes	y+		
B1091-29	8	8	3		8	8	4	6	7	7	7	9	9	0	0	yes	y+ size+ early		
B1093-21	6	6	8	3	8	8	3	8	8	8	8	9	9	0	0	yes	late br app+		
B1093-46	6	8	2	6	8	8	2	8	8	6	7	7	8	0	1	yes	early y+		
B1094-47	7	7	5	7	7	6	2	7	6	6	7	7	8	3	0	ok+	hh y+		
B1094-80	7	7	3	5	8	7	4				8	9	8	2	0	yes	y+ size+ early		
B1098-29	6	7	9		8	7	2	6	5	5	7	5	5	5	0	no	hh hs y-		
B1098-30	6	8	3	7	8	8	5	6	6	6	9	6	9	0	0	no	gc y- app-		
B1099-5	8	9	3	6	8	8	2	7	6	7	6	9	3	0	0	no	hs sg		
B1101-62	6	5	3	7	8	7	3	6	8	7	8	7	7	0	0	no	size- y-		
B1110-10	7	7	5	7	8	9	2	8	8	8	8	9	9	0	0	yes	ok		
B1110-11	7	8	6	5	8	7	3	6	6	6	7	9	9	0	0	yes	y+ size+		
B1158-4	4	8	3	3	8	7	3	6	7	7	9	9	9	0	0	ok+	s+ y? early		
B1158-11	5	7	6	6	7	6	4	6	6	6	7	9	7	0	0	ok	y-		
B1206-10	5	7	3	7	8	7	2	7	8	8	9	9	9	0	1	yes	early hn?		
B1207-15	7	7	6	9	8	7	2	7	7	7	7	7	7	0	0	ok	hs sg gr		
B1208-4	6	7	6	5	7	6	2	8	8	8	8	9	9	0	7	no	hn y+		
B1208-16	7	7	2	7	8	7	4	7	7	7	9	9	9	0	5	no	hn y+		
B1214-7	7	9	4	2	8	8	5	6	7	7	8	9	7	0	2	yes	y+ hs sg		
B1216-3	7	7	5	7	7	7	3	7	7	7	9	7	9	0	4	yes	y+ rot		
B1229-5	8	6	7	7	8	7	3	6	7	7	6	9	1	0	0	no	hs sg		
B1229-16	7	8	4	3	8	8	6	4	5	5	7	9	5	1	1	no	hs sg app-		
B1236-3	7	7	9	5	6	6	3	7	7	7	8	9	9	0	0	yes	y+ rot		
B1236-5	8	7	2	7	7	6	3	7	7	4	8	9	9	0	0	no	y- LB-		
B1239-3	7	7	3	3	7	8	2	6	7	7	9	9	9	2	0	yes	hh y+ s+ early		
B1240-1	6	8	9	6	8	7	3	7	7	7	9	9	9	0	0	yes	size+		
B1240-12	7	8	5	5	8	8	2	4	7	7	9	9	9	0	0	ok+	y? app?		
B1240-14	7	8	2	6	7	6	2	7	7	7	8	9	9	1	3	yes	y+ early		

NJ Variety Table 16. Continued.

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					OVER ALL	Comments					
	A	A	P	M	S	S	C	T	S	D	A	S	G			H	H	H	N	R
B1248-5	5	6		2	5	8	7	3	6	7	7	7	9	6	0	0	no	hs y- early		
B1248-5	7	7		4	7	8	8	2	7	7	7	7	9	6	0	0	ok	sg hs y?		
B1250-3	5	7		6	7	8	7	2	8	8	8	9	9	9	0	6	5	no	hn	
B1250-3	6	8		5	9	7	6	2	5	7	7	8	9	8	0	0	yes	y+ ch?		
B1255-5	4	9		7	5	8	7	5	6	6	6	7	9	9	0	0	no	size- y-		
B1255-9	2	7		3	5	8	7	7	5	6	6	7	9	9	0	9	4	no	hn	
B1255-14	6	7		5	5	8	8	4	7	6	6	7	9	7	0	0	no	y- size- LB-		
B1265-1	6	6		4	7	8	8	4	6	5	5	7	9	7	0	4	8	no	size- hn?	
B1273-5	8	7		6	5	8	8	2	7	8	8	9	9	9	0	0	yes	y+ LB-		
B1275-2	6	7		2	8	7	7	3	7	8	8	9	9	9	0	3	7	ok	s- app+ early	
B1275-3	7	7		7	5	8	8	6	7	5	8	8	9	8	0	0	no	app- y- LB-		
B1279-4	6	8		3	6	7	6	4	5	8	8	9	9	9	0	2	6	ok+	hn y+	
B1283-5	7	6		2	8	8	6	4	6	8	8	9	9	9	0	0	ok+	bees LB- early		
B1284-5	6	7		7	7	8	7	2	6	5	5	9	9	9	1	0	no	y-		
B1291-6	6	8		2	2	8	8	6	4	4	4	7	9	9	0	0	ok	app- sg early		
B1293-2	6	7		2	7	8	8	5	6	7	7	9	9	9	0	0	ok+	y? LB- early		
B1293-3	6	8		2	6	8	8	3	6	8	8	9	9	9	0	0	ok+	early		
B1301-5	6	6		1	7	8	8	3	8	7	7	9	9	9	0	0	no	rot		
B1303-14	6	8		5	7	8	8	3	8	7	7	9	9	9	0	0	ok+	y+ rot		
B1304-2	5	5		5	7	7	7	3	5	5	5	5	9	5	0	0	no	sg rot		
B1306-31	6	7		1	9	8	8	3	6	7	7	2	9	2	0	1	8	no	hs sg	
B1306-37	8	7		2	9	7	7	2	7	7	7	9	9	9	0	0	no	y- size- LB-		
B1307-23	7	8		7	8	7	8	2	8	8	8	7	9	6	0	2	6	ok	y+ app+ hn	
B1307-27	7	9		7	6	8	8	7	7	6	6	7	9	7	2	2	6	no	y hn sg	
B1307-28	7	9		5	7	7	7	3	6	7	7	9	9	9	0	0	yes	y+		
B1308-21	7	7		4	7	8	8	7	6	4	7	6	9	6	0	3	7	no	hs app-	
B1308-22	7	7		4	5	8	7	2	8	5	5	6	9	6	0	4	6	no	hn sg y+ app-	
B1309-21	6	8		5	8	7	6	2	8	6	6	9	7	9	3	1	8	no	y- hh	
B1309-23	7	7		2	5	7	6	2	8	8	8	9	9	9	1	0	yes	y+ size? early		
B1309-24	8	8		4	5	8	7	3	7	5	5	7	9	9	0	0	ok-	rot		
B1309-27	7	6		5	7	8	7	3	6	8	8	9	9	9	1	1	7	yes	y+ app+	
B1309-32	6	8		4	5	8	7	3	7	7	7	9	9	7	0	5	6	no	hn rot	
B1309-34	6	7		5	5	8	7	2	7	6	8	9	9	9	0	0	ok	bees		
B1309-36	7	9		5	8	7	6	2	7	7	7	9	9	7	0	2	6	no	hn size-	
B1311-32	7	8		5	5	8	8	2	5	6	6	9	9	9	0	0	no	ac br size		

NJ Variety Table 16. Continued.

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					OVER ALL	Comments					
	A	P	M	S	S	C	T	S	D	A	S	G	H			S	H	H	N	R
B1312-21	7	8	2	7	7	8	8	4	7	7	9	9	9	1	0	0	0	0	no	y-
B1313-21	5	8	4	5	7	8	7	3	6	6	3	9	1	0	0	0	0	0	no	hs sg rot
B1315-23	7	6	4	7	7	8	8	3	6	7	7	9	7	0	0	0	0	0	yes	hs y+
B1315-27	6	7	5	3	3	9	8	2	9	5	7	9	9	0	0	0	0	0	ok-	app- gr
B1315-31	8	5	3	3	7	8	8	3	5	7	9	9	9	0	0	0	0	0	yes	y+ br early
B1315-32	5	8	3	7	7	8	8	2	8	7	9	9	6	2	1	7	5	0	no	hs y- early
B1315-33	5	8	5	5	7	8	7	4	6	7	6	9	7	1	4	5	0	0	no	hn sg
B1316-21	7	6	2	7	7	8	8	7	5	7	7	9	8	0	0	0	0	0	no	size- early
B1316-28	6	7	5	6	7	8	7	2	5	6	7	9	6	0	0	6	6	0	no	hn hs sg
B1317-23	7	8	3	8	8	8	7	2	8	8	9	9	7	0	0	0	0	0	ok-	bees early
B1319-21	6	7	4	5	7	8	8	2	7	4	3	9	5	0	0	0	0	0	no	sg hs app
B1319-25	6	6	3	7	7	8	7	4	6	6	6	9	5	0	0	1	7	0	no	hs sg size
B1319-27	7	8	2	5	7	8	8	2	5	5	7	6	6	10	0	0	0	0	no	hh gc hs gr
B1320-23	8	8	7	2	2	8	8	3	5	6	6	6	9	0	0	0	0	0	ok-	y+ sg app-
B1320-24	7	6	3	5	7	8	8	2	6	6	5	8	5	0	0	0	0	0	ok	early sg hs
B1320-26	7	8	6	7	7	8	8	7	7	6	3	9	3	0	0	0	0	0	no	hs sg
B1321-21	7	8	4	9	7	8	7	2	8	8	7	9	8	0	0	0	0	0	yes	y+ app+
B1321-22	3	8	5	5	7	8	7	2	8	8	7	9	8	0	0	0	0	0	yes	great
B1321-23	7	6	2	7	7	8	8	2	6	7	9	9	8	1	0	0	0	0	ok	size- early
B1321-24	7	6	2	7	7	7	6	2	8	8	8	8	9	2	1	7	0	0	yes	app+ early
B1321-28	6	4	2	8	7	8	7	2	8	7	9	9	8	0	0	0	0	0	no	y- size- LB-
B1321-29	8	6	2	8	8	8	7	3	7	7	9	9	9	3	1	7	0	0	no	hh size-
B1321-32	7	7	2	8	8	8	7	2	8	8	9	9	7	0	0	0	0	0	yes	y+ hs early
B1321-34	7	8	5	8	8	7	7	2	8	7	9	9	9	0	0	0	0	0	yes	no culls y+
B1321-35	6	7	5	7	7	8	7	3	6	7	7	9	7	0	0	0	0	0	ok-	sg y-
B1321-38	6	4	2	7	7	7	8	4	6	7	9	9	8	1	0	0	0	0	ok	early y-
B1321-40	8	8	5	7	7	8	7	4	5	6	7	9	9	0	0	0	0	0	ok-	size-
B1322-22	6	7	5	4	7	8	8	3	6	7	9	9	9	0	0	1	7	0	yes	y+
B1322-23	5	5	3	9	7	8	7	2	7	8	9	9	6	2	5	5	0	0	no	hn hs
B1322-29	8	7	4	7	5	8	8	2	7	8	8	9	8	0	0	0	0	0	yes	app+
B1323-23	7	6	5	5	3	8	7	2	8	7	5	9	3	0	0	0	0	0	no	hs sg y-
B1326-22	7	6	3	3	3	8	8	2	7	7	9	9	8	0	0	6	2	0	no	hn
B1326-27	6	7	2	7	7	6	6	3	7	7	8	9	6	0	0	0	0	0	no	hs s- y- early
B1326-28	5	8	2	6	7	8	8	4	6	6	7	9	9	2	0	0	0	0	no	y- size- early
B1327-23	7	8	4	8	8	8	8	7	7	7	9	9	9	0	0	0	0	0	no	size-

NJ Variety Table 16. Continued.

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					OVER ALL	Comments						
	A	P	P	M	S	S	C	T	S	D	A	S	G			C	S	H	H	N	R
B1328-22	8	8	8	2	7	7	8	6	2	7	8	7	9	9	2	0	no	hs y-			
B1330-22	7	7	7	4	7	7	8	8	7	7	4	7	9	9	7	0	no	size app			
B1331-22	7	9	7	8	6	7	9	8	2	5	7	8	9	9	9	0	no	y hn			
B1331-24	8	8	8	2	3	3	8	8	3	7	3	6	6	6	6	2	no	app- sg gc hs			
B1332-21	8	8	8	3	6	7	9	8	7	5	4	8	9	9	7	0	no	app- early			
B1332-26	6	6	6	3	7	7	8	8	4	5	5	5	9	9	3	0	no	hs sg y-			
B1332-29	7	7	7	5	7	7	8	8	2	8	7	8	9	9	6	2	ok+	y+ hs			
B1333-21	7	8	7	5	5	7	8	7	2	8	8	9	7	9	9	0	yes	app+ gc			
B1333-22	6	7	7	2	7	7	8	8	4	6	5	9	9	9	9	0	no	app- early			
B1333-24	8	6	6	2	8	7	8	7	2	7	8	9	9	9	9	0	ok+	size- y+ early			
B1333-26	5	4	4	2	9	8	8	8	2	8	7	9	9	9	5	0	no	size- y- hs			
B1333-27	5	6	6	8	8	8	8	8	2	8	7	9	9	9	9	0	ok+	size- early			
B1336-23	8	8	8	4	7	7	8	7	2	7	7	9	7	9	9	1	yes	y+ rot ac			
B1336-24	6	7	7	3	7	7	7	6	2	5	7	8	9	9	6	0	no	y hs early			
B1336-30	8	8	8	3	7	7	8	8	7	4	5	7	9	9	6	1	no	app- hs sg y-			
B1336-36	6	7	7	2	7	7	8	8	3	6	6	9	9	9	9	0	ok+	y- early			
B1337-22	7	6	7	5	7	7	8	8	5	6	6	3	9	9	1	2	no	hs sg y-			
B1337-26	7	6	7	1	8	7	9	8	2	7	7	9	9	9	6	0	no	hs y-			
B1337-29	7	6	7	3	6	7	8	8	3	6	6	7	7	9	7	1	yes	y+ app? early			
B1337-32	6	8	8	5	3	7	8	7	2	8	6	5	9	9	3	2	no	hn hs sg			
B1337-33	8	6	8	3	7	7	8	8	2	7	8	5	9	9	5	0	no	hs sg y-			
B1337-34	8	8	8	3	7	7	8	8	3	3	5	3	9	9	1	0	no	hs sg			
B1338-23	6	8	8	6	5	7	8	7	6	6	6	5	9	9	3	0	no	hs sg			
B1338-27	7	7	7	3	8	5	8	7	4	6	6	8	9	9	9	0	ok-	bees early			
B1339-22	7	9	7	3	5	7	8	7	4	6	7	8	9	9	7	1	yes	y+ early			
B1339-26	8	7	7	4	7	7	7	7	7	6	7	9	9	9	9	0	yes	lw y+			
B1339-27	6	6	6	1	8	7	8	8	4	6	6	9	9	9	9	0	no	y-			
B1339-28	5	9	9	5	7	7	7	6	3	6	6	8	9	9	9	0	no	y-			
B1339-29	7	4	7	2	8	8	7	6	7	6	7	9	9	9	9	0	no	y- gr early			
B1340-23	6	3	3	2	8	8	8	8	3	7	7	7	9	9	3	0	no	hs y- early			
B1342-21	7	8	7	5	5	7	8	7	2	7	7	9	9	9	7	1	yes	hs			
B1342-24	5	7	7	2	8	8	8	8	6	5	7	9	9	9	9	0	no	y-			
B1343-18	4	8	8	5	5	7	8	7	2	7	8	7	9	9	9	2	ok	size+ SG+			
B1344-13	8	5	8	2	6	7	8	7	4	5	6	6	6	9	6	1	no	hn hs sg			
B1344-14	8	7	7	4	8	8	7	6	2	7	7	9	9	9	9	0	ok-	bees LB- early			

NJ Variety Table 16. Continued.

Variety	PLANT				TUBER CHARACTERS								TUBER DEFECTS								Comments				
	A	P	p	M	S	S	C	T	x	h	p	p	A	S	G	H	S	H	H	N		R	ALL	OVER	
B1344-18	6	7		5	5	8	7		3	6	8		9	9	9	9	0				0			yes	y+
B1344-20	7	8		3	7	5	4		7	5	7		9	7	9	9	9	0			0			no	hh size gc
B1344-21	8	8		5	9	5	4		2	7	5		8	9	9	9	2			0			no	rd rus	
B1345-13	7	8		4	8	7	6		3	6	4		6	9	5	9	0			4	5		no	hn hs sg	
B1345-14	7	5		3	8	8	8		2	7	7		9	9	7	9	0			0	6		yes	y+ hs LB- early	
B1345-18	8	7		3	7	5	4		6	5	6		9	9	9	9	2			0	2		ok+	size- early hn?	
B1346-14	5	8		5	6	8	7		2	8	8		8	9	9	9	4			5	5		no	hn	
B1346-15	5	7		5	5	8	7		2	8	6		7	9	9	9	0			9	2		no	hn	
B1346-16	5	8		5	7	8	7		3	8	8		8	9	9	9	0			4	5		no	hn y+ ch+	
B1346-17	7	7		4	5	8	7		3	6	6		8	9	9	9	1			0			ok	size-	
B1348-15	6	8		3	9	7	7		5	5	6		7	9	6	9	2			0	0		no	hs y- early	
B1348-18	6	8		3	8	8	7		4	6	7		9	9	9	9	0			0	0		yes	y+ early	
B1350-17	6	8		4	6	8	8		2	7	8		9	9	9	9	1			0	0		yes	y+	
B1350-20	7	8		5	5	8	8		2	7	6		8	9	9	9	6			0	0		ok-	hh	
B1351-15	7	8		2	5	8	8		2	8	7		6	9	6	9	0			0	0		ok+	hs sg s+ early	
B1351-16	7	7		2	7	9	8		5	6	7		9	9	9	9	1			0	0		no	y- size- early	
B1351-18	6	7		5	3	8	8		5	6	5		9	3	9	7	0			0	0		no	y- gc app-	
B1352-13	8	8		4	5	8	7		7	6	6		7	7	7	9	1			0	0		ok	y sg hs	
B1352-14	7	8		5	2	7	6		3	6	6		3	5	5	9	0			0	0		no	sg hs y-	
B1352-16	7	4		2	5	9	7		3	7	7		8	9	9	9	0			0	0		ok	bees rot early	
B1352-17	6	6		4	9	8	7		7	6	7		5	8	6	9	0			0	0		no	y- hs sg	
B1352-18	6	7		3	7	8	7		7	6	4		2	9	2	9	0			0	0		no	hs sg	
B1352-22	8	9		3	7	8	8		5	5	6		3	9	5	9	0			0	0		no	sg hs y-	
B1352-24	5	4		1	7	7	7		7	5	6		8	8	8	9	0			0	0		no	size y early	
B1353-13	7	6		2	8	8	7		5	7	6		9	9	6	9	0			0	0		no	size y hs	
B1353-14	7	7		2	8	8	8		7	6	5		9	9	7	9	0			0	0		no	y- hs app-	
B1353-19	7	7		2	7	8	7		3	7	7		9	7	7	9	0			0	0		ok+	y- early	
B1353-22	6	6		3	5	8	8		4	6	6		7	9	6	9	1			0	0		no	hs y-	
B1353-24	7	7		4	3	8	8		5	6	6		6	9	6	9	3			0	0		no	y- app- sg hs	
B1354-18	5	8		6	1	9	8		2	8	7		8	7	3	9	1			0	0		no	gc	
B1354-21	7	6		5	6	8	8		2	8	7		8	9	6	9	1			0	0		no	hs size- y-	
B1354-25	7	7		3	3	8	7		2	8	5		6	9	9	9	0			0	0		ok+	y+ size- sg	
B1354-27	6	7		2	5	7	7		2	7	6		5	9	1	9	0			0	0		no	hs sg	
B1354-29	5	7		2	8	7	6		2	8	7		7	9	9	9	0			0	0		no	y- size-	
B1356-13	5	9		3	7	8	6		2	8	7		9	9	9	9	0			0	0		yes	SG+ ch? early	

NJ Variety Table 16. Continued.

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					OVER ALL	Comments									
	A	P	p	M	S	S	C	T	x	h	p	p	A			S	G	C	S	H	H	H	N	R
B1356-20	8	7		4	7	8	8	8	8	7	6	5	7	9	3	0	no	sg hs y- size hs sg						
B1356-21	8	9		4	3	8	8	8	8	5	6	5	6	9	6	1	no	app- y- y- sg LB-						
B1357-16	6	8		2	5	8	8	8	8	5	6	5	7	9	9	0	no	ok- hs y- hs sg app-						
B1357-18	5	6		4	6	9	8	8	8	3	3	7	7	9	7	1	no	ok- hs sg						
B1357-19	7	9		7	8	8	8	8	8	3	5	3	6	9	2	0	no	hs sg						
B1357-22	6	8		3	7	8	8	8	8	2	6	7	1	9	5	0	no	hs sg						
B1357-23	8	7		7	9	8	8	8	8	3	7	7	7	9	1	0	no	ok- y- early						
B1358-19	5	6		2	7	8	7	8	7	2	5	6	6	9	9	0	no	hs gc sg						
B1360-13	8	9		5	9	7	6	7	6	2	5	6	6	9	6	0	no	ok- y- hh hs rot early						
B1360-14	6	5		2	7	8	8	8	8	4	7	6	7	9	9	0	no	ok- y- y+ size+ hs						
B1360-15	7	7		2	7	8	8	8	8	3	6	7	7	8	6	4	ok	yes y- app- early						
B1360-16	7	8		5	7	8	8	8	8	2	6	5	7	9	7	3	ok-	no y- sg early						
B1361-13	7	8		2	7	7	7	7	7	2	6	6	7	9	7	1	no	ok- size- y- early						
B1361-15	6	7		2	7	7	7	7	6	3	6	6	6	7	9	0	no	yes y+ early						
B1361-18	7	8		4	5	8	8	8	7	3	5	7	9	9	8	0	yes	early hn? y- hn						
B1361-19	5	8		2	7	8	8	8	8	2	8	7	7	9	9	2	no	ok- y- early						
B1362-14	6	5		2	3	8	8	8	7	2	8	8	7	9	9	0	yes	yes y+ early						
B1363-17	5	3		2	7	8	8	8	7	2	6	6	6	7	9	0	yes	early hn? y- hn						
B1364-15	6	6		3	6	7	6	7	6	5	6	6	6	7	9	0	ok-	hn hn y- y- early						
B1364-17	6	8		4	3	8	8	8	7	5	6	6	7	9	9	0	no	ok- y- early						
B1364-19	5	8		4	3	9	8	8	7	2	6	6	7	9	9	0	no	ok- y- early						
B1366-14	5	7		3	8	8	7	7	7	5	7	6	7	9	8	0	ok	hn hn y- y- early						
B1366-15	6	9		5	7	7	7	7	7	2	8	7	7	9	9	1	no	ok- y- early						
B1368-13	6	6		3	2	9	8	8	8	7	6	6	7	9	5	0	no	hs y- early						
B1368-16	5	9		5	5	9	9	9	8	5	3	6	6	7	8	0	yes	y+ y+ hh						
B1369-14	7	5		5	9	8	8	7	7	4	6	7	7	9	9	2	ok+	hn y- hn hs						
B1369-15	4	9		6	8	6	6	6	6	2	8	7	7	9	9	0	no	yes y+ early						
B1369-16	7	7		3	8	8	7	7	7	2	8	8	7	9	6	0	yes	app+ early						
B1370-14	4	7		3	3	8	8	8	8	3	3	8	8	9	9	0	yes	hs size- app- hs sg						
B1375-14	7	7		2	7	7	7	7	7	3	8	8	8	8	9	0	no	no hs sg						
B1375-15	7	9		5	8	8	8	8	8	5	7	5	5	9	4	0	no	hs sg						
B1375-17	7	8		9	7	7	7	5	4	7	7	4	2	9	5	0	no	hs sg						
B1378-13	7	8		3	7	7	7	7	6	4	7	6	6	9	9	0	no	LB-						
B1384-13	8	7		3	7	7	7	7	7	2	7	7	7	9	6	0	no	LB-						
B1384-15	6	6		5	9	7	7	7	7	2	7	6	6	6	9	0	no	LB-						

NJ Variety Table 16. Continued.

Variety	PLANT				TUBER CHARACTERS					TUBER DEFECTS					OVER ALL	Comments			
	A	P	M	t	S	C	T	S	D	A	S	G	H	H			H	N	R
B1385-16	7	9	6	6	7	7	7	7	5	6	2	9	6	2	1	7	no	app- size- sg hs y- LB-	
B1394- 3	8	8	8	7	7	7	7	2	7	5	0	9	3	0	0	0	no	hs sg	
B1394- 4	9	8	7	7	7	7	7	7	5	5	0	9	3	0	0	0	no	hh hs sg	
B1395- 4	8	9	9	5	5	4	4	7	7	3	4	9	5	4	0	0	no	y- LB- early	
B1395- 5	7	7	2	9	5	4	4	8	7	6	0	9	5	0	2	7	no	sg hs early	
B1396- 6	6	8	2	2	8	6	6	3	3	8	0	7	5	0	0	0	ok-	hs sg y-	
B1396-10	6	6	3	3	7	7	7	8	6	8	0	3	6	0	0	0	no	sg	
B1396-13	6	8	4	4	3	8	8	5	6	5	0	9	6	0	0	0	no	app- y-	
B1396-15	6	7	7	7	6	7	7	7	5	5	1	9	9	1	0	0	no	hh rot?	
B1397- 4	7	7	2	7	7	7	7	2	7	7	5	8	9	1	8	0	ok	hs sg early	
B1398- 1	8	8	2	2	7	8	7	2	8	7	1	3	3	1	0	0	no	hs sg hn	
B1398- 4	8	8	3	3	8	6	6	3	7	6	0	5	5	0	2	3	no	hs sg	
B1398- 5	8	8	6	6	7	7	7	7	7	6	2	9	3	2	0	0	no	hs sg	
B1398- 7	9	9	7	7	7	6	6	2	7	6	2	7	1	2	0	0	no	hs hh	
B1399- 4	7	7	2	7	7	7	7	2	8	8	1	6	9	1	1	8	yes	y+ early rot	
B1399- 8	8	9	5	5	7	8	8	2	8	5	1	9	5	1	0	0	no	hs y-	
B1400-10	7	8	5	5	9	6	6	7	6	5	0	7	9	0	0	0	no	app- size- y-	
B1401- 2	8	7	8	5	8	7	7	8	4	5	0	9	4	0	0	0	no	hs gc rot	
B1401- 3	8	7	4	7	8	8	8	5	4	5	0	9	9	0	0	0	no	sg app-	
B1402- 3	7	9	5	7	5	7	7	7	5	6	0	7	9	0	0	0	no	sg	
B1402- 4	7	7	4	6	7	6	6	5	3	3	0	2	2	0	2	7	no	hs sg LB-	
B1402- 5	8	8	6	6	8	7	7	7	4	3	0	9	2	0	0	0	no	hs sg	
B1402-10	7	8	6	5	7	6	6	7	7	6	0	6	5	0	2	7	no	hs sg y- LB-	
B1402-11	7	6	5	3	7	6	6	6	4	3	0	9	9	0	0	0	no	hs app- LB-	
B1403- 3	6	8	7	7	8	7	7	6	6	6	2	8	7	2	2	8	no	y- hh LB-	
B1406- 8	7	8	3	3	7	8	8	2	6	6	0	9	9	0	0	0	no	y- size-	
B1406- 9	8	8	3	3	7	8	8	7	8	6	1	6	5	1	1	7	no	rot hs	
B1406-10	8	8	6	6	7	6	6	2	7	6	0	6	6	0	0	0	yes	y+ hs sg cc7	
B1406-11	7	8	4	7	7	6	6	2	8	7	0	9	9	0	0	0	no	size- y-	
B1406-12	8	8	8	8	6	6	6	2	8	8	1	9	9	1	6	5	no	hn LB-	
B1407- 1	8	7	6	6	7	6	6	5	5	7	1	9	8	1	6	4	no	hn cc6	
B1407- 2	7	6	6	6	7	7	7	2	8	7	0	6	6	0	1	6	no	hs sg hn	
B1407- 6	6	6	1	7	8	8	8	5	5	7	2	7	9	2	0	0	no	y-	
B1407- 7	7	8	5	7	7	7	7	3	6	5	0	9	5	0	1	6	no	hs sg size-	
B1407- 8	6	8	4	9	8	8	7	2	6	8	0	7	8	0	2	8	yes	y+ rot? cc7	

NJ Variety Table 16. Continued.

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					OVER ALL	Comments		
	A p	A P	M t	S S	C l	T x	S h	D p	A p	S G	G C	H S	H N			R	
B1407-9	7	7	3	7	8	7	2	7	4	6	9	9	0	4	7	no	app- y- sg
B1408-3	7	9	5	6	6	6	2	8	8	9	9	9	0	0		yes	y+ size+
B1410-2	8	7	5	8	8	8	3	7	6	8	9	9	0	0		no	y- LB-
B1413-1	7	8	3	3	8	8	2	8	6	6	9	5	0	0		ok-	hs sg LB- early
B1413-4	5	9	4	3	8	7	2	8	7	7	9	7	0	2	8	yes	gr hs sg
B1413-5	5	9	5	5	8	8	2	8	6	9	9	9	0	0		no	size- y-
B1413-10	8	8	5	4	8	8	3	8	7	9	9	9	1	0		yes	y+ rot
B1414-2	6	7	5	1	9	9	3	5	7	6	9	8	0	0		ok	br wh y-
B1414-6	7	8	4	7	7	7	3	6	6	9	7	8	0	0		yes	y+ app?
B1415-1	7	8	3		8	8	4	6	4		5	5	0	0		no	app- hs y-
B1415-2	7	7	7	2	8	8	3	5	4	8	9	9	0	0		no	app-
B1415-3	7	8	2	3	7	6							0	0		no	y- size- early
B1415-5	6	5	2	7	7	6	3	8	8	9	9	9	0	0		yes	early y+
B1415-7	6	7	5	5	8	8	5	8	7	9	9	9	0	0		yes	size+ rikki
B1415-8	7	7	3	7	8	8	2	6	6	9	9	9	2	0		yes	early cc6
B1415-9	8	8	3	5	8	7	2	6	6	8	9	6	0	0		no	hs size-
B1416-1	8	6	3	8	8	8	4	6	6	8	9	6	0	0		ok+	bees
B1416-2	7	8	4	7	8	7	2	7	7	8	7	8	0	0		yes+	y+ SG+ ch+
B1418-1	5	7	2	7	8	8	2	7	7	9	9	9	1	3	5	no	hn y-
B1418-2	8	7	2	7	8	8	2	7	7	9	8	7	0	0		yes	y+ early
B1418-3	7	8	6	7	8	7	2	8	8	8	9	8	0	0		yes	y+ app+
B1418-5	8	7	2	7	8	6	2	8	8	9	9	9	0	0		yes	app- early
B1418-6	6	8	4	6	8	7	3	7	7	7	9	9	0	0		no	y-
B1418-8	7	7	3	7	8	7	2	8	7	7	8	8	0	5	3	no	hn size-
B1421-4	6	7	6	2	8	8	7	7	6	7	9	7	0	0		ok	hs sg
B1422-1	8	9	9	7	7	6	2	8	7	5	9	1	0	0		no	hs sg
B1423-1	8	8	2	8	7	6	2	8	5	9	9	7	0	0		no	app- early
B1425-2	8	8	6	4	8	7	2	6	6	7	9	9	2	0		yes	y+ cc8 NJ
B1425-4	8	9	7	6	8	7	2	7	8	9	9	7	0	0		ok+	rot
B1425-5	8	7	3	7	7	7	2	8	8	9	9	9	1	1	5	yes	early hn?
B1425-6	8	8	2	6	7	6	2	7	6	7	9	9	0	0		ok+	sg rot? early
B1425-7	9	8	5	7	7	7	2	7	7	6	9	7	0	0		yes	y+ SG+ ch?
B1425-9	9	7	6	7	7	7	2	8	8	9	9	9	1	0		yes+	y+ SG+ Size+
B1425-10	9	8	4	7	8	7	2	7	5	6	9	5	0	0		no	hs sg
B1426-1	9	8	2	7	7	6	2	5	5	6	9	7	1	1	8	ok+	sg app- early

NJ Variety Table 16. Continued.

Variety	PLANT			TUBER				CHARACTERS			TUBER				DEFECTS			OVER ALL	Comments
	A	P	M	S	S	C	T	S	h	p	A	S	G	H	H	N	R		
B1426-2	7	9	5	5	8	7	6	6	6	3	6	7	9	0	7	4	no	hn	
B1426-4	8	8	4	7	7	6	5	7	5	5	9	9	6	0	4	8	no	hs LB-	
B1426-6	7	7	4	8	7	6	2	6	7	7	5	9	3	0	5	4	no	hn hs sg	
B1426-9	8	6	7	8	8	7	2	6	6	6	8	9	9	0	8	3	no	hn	
B1426-10	8	8	5	6	8	7	2	6	6	6	7	9	9	3	5	4	no	hn gr	
B1426-12	9	8	8		8	7	2	5	4	4	3	9	5	0	0		no	sg hs app-	
B1426-15	7	5	4	7	8	6	3	6	4	4	6	9	5	0	7	5	no	hn hs	
B1427-1	8	8	3	4	8	7	2	8	7	7	9	9	9	1	0		yes	y+ early	
B1427-2	9	8	6	5	8	7	5	7	4	4	3	9	1	0	1	6	no	hs sg hn?	
B1427-4	8	5	6	5	8	7	2	8	6	6	7	9	7	0	0		yes	y+ ch+ app?	
B1427-5	7	8	4	7	7	6	3	6	7	7	9	9	6	0	0		yes	y+ size+ hs	
B1427-6	4	8	4	2	7	7	2	7	5	5	7	9	5	0	4	7	no	hs sg y-	
B1428-1	8	8	5	5	8	8	2	6	8	7	9	9	9	0	0		ok+	y+ size-	
B1428-2	8	8	6	9	8	7	2	7	7	7	9	9	9	1	2	6	yes	y+ yf hn? LB-	
B1428-3	8	5	8	9	8	7	2	7	7	7	9	9	9	0	0		ok+	bees LB-	
B1428-4	8	8	6	9	8	6	2	5	7	7	9	9	9	0	0		yes	y+ size+ SG+	
B1428-8	7	8	3	7	7	6	2	8	8	8	8	9	8	0	0		yes	y+ ch+ early	
B1429-1	8	8	5	6	7	6	2	7	6	6	8	9	9	1	6	5	no	hn	
B1429-2	5	8	7	6	7	7	5	6	6	6	8	9	9	1	4	7	ok	app-	
B1429-4	6	7	4		8	7	3	6	6	6	5	9	4	0	0		hs	sg y-	
B1429-A1	7	8	5	7	7	7	5	6	7	7	8	9	9	1	1	8	no	size+ y+	
B1429-A2	7	7	5	2	8	8	2	8	7	7	9	6	9	1	1	6	yes	y+ size+ hn?	
B1429-A3	8	7	4	4	7	7	3	4	7	7	8	9	9	0	0		yes	y+ size+	
B1429-A4	7	7	2		8	7	2	7	6	6	9	9	9	0	1	7	ok+	early	
B1429-A5	7	4	2	7	8	9	2	8	8	8	9	9	9	0	0		yes+	early y+ app-	
B1429-A6	6	4	4	5	8	8	2	7	7	7	6	9	6	0	0		no	hs sg y-	

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.
 (2) HH = No. of Hollow Heart tubers out of 10. HN = No. of Heat Necrosis tubers out of 10.

NJ Rating Table. Rating Codes For Plant and Tuber Characters, Tuber Defects, and Chip Color Ratings.

Ap = Appearance	Cl = Color	Ap = Appearance	HH = Hollow Heart
AP = Air Pollution	Tx = Texture	SG = Second Growth	HN = Heat Necrosis
Mt = Vine Maturity	Sh = Shape	GC = Growth Crack	R = Heat Necrosis Rating
SS = Tuber Skin Set	Dp = Depth	HS = Heat Sprouts	7=acceptable, 5=is not acceptable

Plant & Tuber Appearance (Ap)	Foliar Disease Rating (AP)	Vine Maturity (Mt)	Tuber Skin Set (SS)	Tuber Color (Cl)	Tuber Texture (Tx)
1. very poor	1. dead	1. very early	1. very poor	1. purple	1. part russet
2.	2. very severe	2.	2.	2. red	2. hev. russet
3. poor	3. severe	3. early	3. poor	3. pink	3. mod. russet
4.	4.	4.	4.	4. dark brown	4. lgt. russet
5. fair	5. moderate	5. medium	5. fair	5. brown	5. net
6.	6.	6.	6.	6. tan	6. slight net
7. good	7. slight	7. late	7. good	7. buff	7. mod. smooth
8.	8. very slight	8.	8.	8. white	8. smooth
9. excellent	9. none	9. very late	9. excellent	9. bright white	9. very smooth

Tuber Shape (Sh)	Tuber Depth (Dp)	Tuber Disease Rating (SG, GC, HS, HN)	Wise Foods Chip Color
1. very round	1. very flat	1. very severe	1. paper white
2. mostly round	2.	2.	2.
3. round to oblong	3. flat	3. severe	3.
4. mostly oblong	4.	4.	4. acceptable
5. oblong	5. ok	5. moderate	5. borderline
6. mostly oblong	6.	6. borderline	6. unacceptable
7. oblong to long	7. good	7. slight	7.
8. mostly long	8.	8. very slight	8.
9. very long	9. very round	9. none	9. black chip

New York - Upstate
D.E. Halseth, W.L. Hymes
R.W. Porter, R.L. MacLaury

Program Scope:

Potato variety yield trials were conducted in five counties in upstate New York in 1995 in which a total of 30 named and 77 numbered clones were evaluated. Eight replicated trials were conducted at the Thompson Vegetable Research Farm at Freeville in Tompkins County on a Howard gravelly loam soil. Grower trials were conducted on mineral soils near Arkport (Steuben County), Chateaugay (Franklin County) and Hermitage (Wyoming County) and on muck soil near Elba (Orleans County). Trials at Arkport, Hermitage and Freeville were irrigated 1, 3 and 4 times, respectively. All trials were grown using standard commercial cultural practices. As evaluation of potato lines with golden nematode (GN) resistance is of high priority, 43% of the named and 75% of the numbered entries in these trials have GN resistance. Marketable yield, tuber quality and appearance, maturity, storage life and processing potential are among the important characteristics which are evaluated.

Research Farm Results:

The early maturity yield trial had three clones which significantly outyielded Superior. CF7523-1 has consistently been the highest early maturity performer over the past several seasons. AF1470-18 had good yield but very high internal necrosis and very low specific gravity. AF1426-1 had no internal defects but a high percentage of external defects. The medium maturity trial had seven entries with marketable yield equal to or above Katahdin. The European varieties Concorde, Estima, Penta and Sante all had high percentages of either external or internal defects. Andover and NY103 continue to have outstanding tuber appearance ratings. Nine lines in the medium-late trial had marketable yields above Katahdin. NY101 was again the top yielder in this maturity group. Morene, a European variety, had the most combined external and internal defects. The late maturity trial had very good total yields, but a higher than normal percentage of external defects across the entire trial, some of which was due to greening resulting from hilling difficulties following

wet weather. Chipeta had less than 13% marketable yield due to excessive amounts of growth cracks and misshapen tubers. All but one clone in the Cornell advanced trial had marketable yields above Katahdin, while two (P1-101 and P7-19) had marketable yields above Atlantic. External and internal defects for all lines were below the standards in the trial. The red/purple skinned trial had only two clones with yields above Chieftain. N38-1R, N38-5R and P49-19R had very good appearance. In the russet skinned trial B1004-8 had the best marketable yield and B9922-11 the highest specific gravity. In the advanced University of Maine and USDA trial B1029-6 had the highest marketable yield, and MaineChip the highest specific gravity.

Grower County Trial Results:

Red and white tablestock selections were grown in the Franklin and Orleans county trials. The round white clone NY101 had the highest yields at both sites. CF7523-1 and NYE11-45 also yielded well at both sites. N15-3 and Andover had the highest gravity in the Franklin and Orleans trials, respectively. Redsen had the best red color; all other red selections were lighter in color similar to Norland.

In the chip processing variety trials in Steuben and Wyoming counties, NYE11-45 was the top yielder. B0564-8, NY87, NY102, NY103, Pike and Snowden all outyielded Atlantic at both sites. Atlantic and B0178-34 had the highest specific gravity in both processing trial sites. Atlantic and Snowden had the highest percentage of hollow heart at both locations.

Table Heading Explanations:

Marketable yield in cwt/a was calculated from total yield less: external defects; undersize tubers (smaller than 1 7/8 inches); and oversize tubers (over 4 inch diameter).

Percent marketable yield represents the percentage that each entry's marketable yield is of that of a specified standard variety in that trial.

Size distribution percentage is the weight of a specific size category divided by total yield (including defects).

Specific gravity was taken by potato hydrometer.

Vine maturity ratings were on a nine point scale:

- 1 = all plants completely dead
(very early maturity)
- 9 = all plants full green
(very late maturity)

Tuber shape was classified using the code:

- 1 = round
- 2 = mostly round
- 3 = round to oblong
- 4 = mostly oblong
- 5 = oblong
- 6 = oblong to long
- 7 = mostly long
- 8 = long
- 9 = cylindrical

Tuber appearance was subjectively evaluated using the scale:

- 1 = extremely rough or otherwise unattractive
- 9 = very uniform and attractive

External defects were rated on all material graded. Internal defects were made on a subset of tubers, usually 10 per replication, taken from size categories 3 and 4.

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The Freeville crew is acknowledged for their excellent cooperation in maintaining the research farm plots.

Update New York Table 1. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the early maturity trial grown at Freeville, New York - 1995.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.		
								1 7/8-4"	2 1/2-4"				
			1	2	3	4	5						
AF1424-7	347	312	113	5	28	56	9	2	93	65	7.1	5.1	79
AF1426-1	384	163	59	4	12	36	30	18	77	65	5.5	7.2	66
AF1438-6	357	250	90	3	19	48	23	6	91	72	5.8	6.4	61
AF1470-18	399	340	123	9	43	41	6	0	91	48	9.8	4.2	59
AF1475-16	332	275	99	4	20	52	17	6	90	69	6.0	5.8	69
AF1565-12	339	280	101	10	55	33	3	0	90	35	8.6	4.1	67
AF1606-2	267	215	78	8	37	43	10	2	90	53	5.8	4.8	69
CF7523-1	504	441	159	7	43	45	4	0	93	50	11.5	4.5	71
Superior (std)	307	277	100	3	27	60	10	0	97	70	5.6	5.8	71
Waller-Duncan LSD (k=100)	75	67									1.2	0.7	3
C.V. (%)	(14)	(17)									(13)	(9)	(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 1

Vine-kill date (mowed): August 21

Harvest date: August 22

Upstate New York Table 2. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the early maturity trial grown at Freeville, New York - 1995.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
AF1424-7	3.4	1.0	7.9	2.6	1.7	0.6	0.3	0.0	0.0	0.0	0.0
AF1426-1	6.8	5.0	3.0	35.1	6.4	18.0	9.6	1.0	0.0	0.0	0.0
AF1438-6	2.6	1.0	8.0	20.8	3.7	2.1	15.1	0.0	2.5	0.0	5.0
AF1470-18	4.1	1.8	6.3	5.9	1.7	0.9	2.9	0.4	0.0	0.0	25.0
AF1475-16	3.8	2.0	7.3	6.1	3.0	1.6	1.2	0.3	2.5	0.0	0.0
AF1565-12	3.4	2.0	7.9	6.5	2.9	3.1	0.5	0.0	0.0	0.0	0.0
AF1606-2	2.1	4.0	5.1	9.8	2.5	6.4	0.7	0.2	5.0	0.0	0.0
CF7523-1	5.8	2.0	5.0	5.2	2.4	2.5	0.4	0.0	0.0	0.0	7.5
Superior (std)	1.5	2.0	5.5	6.7	2.5	3.5	0.7	0.0	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 3. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium maturity trial grown at Freeville, New York - 1995.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of		Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.	
		cwt/A	std	1	2	3	4	5	1 7/8-4"	2 1/2-4"			
AF1433-4	410	337	114	5	32	47	13	3	91	60	7.1	6.0	67
AF1438-5	323	247	84	16	66	15	3	0	84	18	9.2	3.7	61
Andover	341	295	100	7	50	38	4	1	91	41	7.5	4.7	77
Atlantic	379	308	104	11	55	31	2	1	88	33	9.0	4.4	83
Concorde	429	262	89	18	47	30	5	0	82	35	11.0	4.1	73
Estima	386	222	75	12	59	23	5	1	87	28	9.3	4.3	74
Katahdin (std)	376	295	100	7	41	44	7	1	92	51	7.6	5.2	66
M19-4	327	250	85	5	35	52	5	3	92	57	6.3	5.4	69
Monona	323	251	85	7	38	42	7	6	87	49	6.3	5.3	66
ND2417-6	386	289	98	11	53	31	4	1	87	34	9.1	4.4	74
NY94	394	308	104	5	42	43	7	3	92	50	7.8	5.3	76
NY102	325	248	84	9	50	36	4	1	90	40	7.4	4.5	80
NY103	375	320	108	4	35	50	10	1	95	60	6.6	5.9	69
NY105	385	270	91	6	28	48	14	4	90	62	6.7	6.0	72
NY107 (M14-1)	332	244	83	12	56	26	5	2	86	30	8.0	4.3	80
NY109 (M19-3)	360	304	103	3	28	54	12	3	93	65	6.2	6.1	63
Penta	428	281	95	14	61	23	2	0	86	25	10.8	4.1	71
Sante	440	321	109	12	59	26	3	0	88	29	10.1	4.5	83
Waller-Duncan													
LSD (k=100)	48	50									1.0	0.5	3
C.V. (%)	(9)	(12)									(9)	(8)	(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 3

Vine-kill date: August 28

Harvest date: September 14

Upstate New York Table 4. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium maturity trial grown at Freeville, New York - 1995.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
AF1433-4	4.4	1.0	6.5	9.7	3.7	3.5	2.0	0.5	0.0	0.0	0.0
AF1438-5	3.3	2.0	6.0	8.0	2.8	3.0	1.8	0.4	0.0	0.0	2.5
Andover	2.3	1.0	7.8	4.6	1.9	2.6	0.1	0.0	0.0	0.0	0.0
Atlantic	3.4	2.0	6.5	7.1	2.8	2.2	1.7	0.4	12.5	0.0	0.0
Concorde	5.3	4.0	4.5	20.7	6.3	12.6	1.2	0.7	0.0	0.0	0.0
Estima	4.5	6.0	4.3	29.6	3.2	20.0	6.0	0.5	0.0	2.5	20.0
Katahdin (std)	5.4	2.0	4.3	13.8	7.5	4.4	1.7	0.3	0.0	0.0	0.0
M19-4	3.4	1.0	6.1	15.3	5.9	4.5	4.4	0.6	5.0	0.0	0.0
Monona	4.3	2.0	4.0	9.5	2.1	6.4	1.1	0.0	0.0	7.5	0.0
ND2417-6	3.5	2.0	5.0	12.3	3.9	8.0	0.5	0.0	0.0	2.5	0.0
NY94	3.0	2.0	5.8	13.7	2.1	4.1	7.5	0.0	10.0	0.0	0.0
NY102	4.0	2.0	6.8	13.4	3.5	2.5	7.4	0.0	2.5	0.0	0.0
NY103	4.6	1.0	8.3	9.8	6.7	2.8	0.4	0.0	0.0	0.0	2.5
NY105	5.4	3.0	5.3	19.6	9.7	7.7	2.0	0.2	2.5	0.0	0.0
NY107 (M14-1)	4.1	2.0	5.3	13.0	5.1	4.7	2.3	0.9	0.0	7.5	2.5
NY109 (M19-3)	2.1	1.0	7.6	8.7	4.1	3.0	1.5	0.2	0.0	0.0	2.5
Penta	4.8	2.0	3.5	20.2	7.4	6.2	6.6	0.0	0.0	10.0	0.0
Sante	4.8	3.0	3.3	15.0	2.5	9.4	3.1	0.0	0.0	7.5	20.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 5. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium-late maturity trial grown at Freeville, New York - 1995.

Variety/Clone	Total Yield cwt/A	Mkt. Yield		Size Distrib. by Class ¹					Size Distrib. (%)		Mean Tuber		Spec. Grav.
		cwt/A	std	(% of total yield)					1 7/8-4"	2 1/2-4"	#/ft	wt(oz)	
				1	2	3	4	5					
AF1060-2	423	341	122	11	57	30	2	0	89	32	10.0	4.4	69
AF1455-9	326	220	79	25	66	10	0	0	75	10	10.0	3.4	68
AF1470-17	493	363	130	7	38	40	12	3	90	52	9.4	5.4	60
Atlantic	396	318	114	7	47	39	6	2	92	44	8.3	4.9	84
Kanona	347	268	96	6	28	45	15	6	88	60	5.9	6.1	74
Katahdin (std)	366	279	100	5	42	39	13	2	93	52	7.1	5.4	65
Kennebec	360	218	78	5	36	40	16	2	93	56	6.0	6.3	67
Monona	331	255	91	6	40	39	11	4	90	50	6.6	5.2	64
Morene	400	245	88	13	58	28	2	0	87	30	9.4	4.4	77
N15-8	410	341	122	3	39	45	10	3	94	55	7.2	5.9	79
N15-18	291	224	80	9	57	28	5	1	90	33	6.9	4.4	85
N50-3	302	257	92	10	56	30	4	0	90	34	7.4	4.3	75
NY84	429	346	124	8	44	39	8	1	91	47	8.7	5.1	62
NY87	362	289	104	5	48	39	5	2	92	44	7.2	5.2	69
NY95	343	290	104	5	54	35	6	1	94	40	7.3	4.9	87
NY101	512	439	157	4	31	54	9	2	94	63	9.4	5.7	72
NY111 (M39-4)	364	290	104	8	62	27	3	0	92	30	8.7	4.4	83
W870	341	264	95	8	54	30	7	1	91	37	7.6	4.7	83
Waller-Duncan													
LSD (k=100)	39	36									0.8	0.6	2
C.V. (%)	(8)	(10)									(8)	(10)	(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Upstate New York Table 6. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium-late maturity trial grown at Freeville, New York - 1995.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
AF1060-2	2.9	3.0	5.8	8.8	3.8	3.6	1.5	0.0	0.0	0.0	0.0
AF1455-9	3.4	1.0	7.0	8.1	5.0	2.9	0.2	0.0	0.0	2.5	0.0
AF1470-17	1.4	3.0	5.0	16.4	6.2	8.0	2.1	0.1	0.0	2.5	0.0
Atlantic	2.5	1.0	6.0	11.5	4.9	3.8	2.8	0.0	5.0	0.0	0.0
Kanona	4.1	2.0	5.0	10.6	7.0	2.0	1.4	0.2	0.0	12.5	0.0
Katahdin (std)	4.0	2.0	5.0	17.1	7.8	5.2	4.1	0.0	0.0	2.5	0.0
Kennebec	1.6	6.0	3.8	32.3	11.5	13.5	6.7	0.6	0.0	0.0	0.0
Monona	2.0	3.5	4.0	13.5	2.8	7.6	3.0	0.0	0.0	0.0	0.0
Morene	7.0	6.0	5.0	26.2	9.9	14.9	1.1	0.4	2.5	12.5	12.5
N15-8	3.8	2.0	7.5	10.7	4.7	1.9	4.0	0.0	0.0	0.0	0.0
N15-18	1.4	2.0	7.8	13.0	5.2	1.7	6.0	0.0	0.0	0.0	0.0
N50-3	1.3	1.0	8.0	5.4	1.2	2.4	1.8	0.0	0.0	0.0	0.0
NY84	2.5	2.0	7.1	10.6	4.3	5.0	1.2	0.0	0.0	0.0	0.0
NY87	1.9	3.0	4.8	12.6	4.4	6.4	1.7	0.0	2.5	0.0	0.0
NY95	3.1	3.0	5.3	9.1	3.4	5.2	0.5	0.0	2.5	0.0	0.0
NY101	4.9	1.3	6.8	8.2	4.9	0.8	2.6	0.0	0.0	0.0	0.0
NY111 (M39-4)	3.9	2.0	5.5	12.3	6.7	3.6	1.8	0.2	20.0	0.0	0.0
W870	3.0	3.0	4.0	14.0	4.8	8.2	0.8	0.3	2.5	0.0	2.5

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 7. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the late maturity trial grown at Freeville, New York - 1995.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	Yield % of std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.	
				1	2	3	4	5	1 7/8-4"	2 1/2-4"			
Allegany Atlantic B0178-34	415	271	109	5	32	43	16	4	91	58	7.2	6.0	84
	420	350	141	4	38	49	8	1	95	57	8.1	5.4	83
	438	304	122	4	28	42	19	7	89	61	7.1	6.4	88
B0564-8 B0564-9 Castile	377	303	122	14	59	27	0	0	86	27	9.4	4.2	76
	351	289	116	6	40	45	8	1	93	53	6.9	5.3	74
	457	281	113	6	31	41	15	7	87	56	8.2	5.8	75
Chipeta Elba Genesee	444	56	23	3	14	33	19	31	66	52	5.5	8.4	73
	471	326	132	5	38	39	11	6	89	50	8.7	5.6	84
	347	223	90	5	29	45	15	6	88	60	6.0	6.1	66
Katahdin (std) Monona N15-3	405	248	100	3	26	48	16	7	90	64	6.4	6.6	67
	302	202	81	5	35	46	9	5	90	55	5.5	5.8	63
	372	238	96	6	47	40	5	1	92	45	7.5	5.1	93
NY108 (M14-6) NY110 (M28-3) NYE11-45	337	227	92	4	17	44	21	14	82	65	4.8	7.2	80
	378	274	111	3	25	46	16	11	86	62	5.6	7.0	74
	455	349	141	6	43	41	8	2	92	49	9.1	5.2	64
Pike Snowden St. Johns	408	320	129	7	50	38	5	1	93	43	8.8	4.8	83
	447	336	135	5	39	46	8	1	94	55	8.4	5.6	84
	477	225	91	3	15	39	23	21	77	62	6.1	8.1	72
Waller-Duncan LSD (k=100) C.V. (%)	48	47									0.8	0.9	3
	(9)	(14)									(9)	(11)	(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 9

Vine-kill date: September 14

Harvest date: September 29

Upstate New York Table 8. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the late maturity trial grown at Freeville, New York - 1995.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Allegany	5.3	2.0	6.0	24.6	15.4	6.6	2.6	0.0	0.0	0.0	0.0
Atlantic	2.9	2.0	6.0	11.3	4.8	3.8	2.5	0.2	7.5	0.0	0.0
B0178-34	4.6	4.0	5.4	19.8	10.4	5.4	3.6	0.4	0.0	0.0	7.5
B0564-8	2.4	1.0	6.9	5.1	2.9	1.8	0.2	0.3	0.0	0.0	0.0
B0564-9	2.0	2.5	5.6	10.6	6.6	3.5	0.1	0.4	12.5	0.0	0.0
Castile	4.3	6.8	4.3	24.2	7.4	15.9	0.5	0.4	0.0	2.5	0.0
Chipeta	5.4	4.0	3.9	54.3	12.3	14.7	24.2	3.1	2.5	0.0	0.0
Elba	6.1	2.0	4.9	19.2	11.1	5.1	3.0	0.0	2.5	5.0	0.0
Genesee	5.5	2.0	6.4	24.0	12.6	7.8	3.7	0.0	0.0	0.0	0.0
Katahdin (std)	5.0	3.0	4.9	28.7	15.0	10.3	3.2	0.2	0.0	0.0	0.0
Monona	2.4	4.9	3.8	23.3	3.8	16.6	2.7	0.2	2.5	0.0	2.5
N15-3	3.3	7.0	5.1	28.0	19.7	6.5	1.9	0.0	0.0	0.0	0.0
NY108 (M14-6)	4.4	1.0	6.5	14.5	8.0	4.1	2.2	0.2	0.0	2.5	0.0
NY110 (M28-3)	4.3	2.8	5.4	13.6	8.2	5.0	0.3	0.0	0.0	0.0	0.0
NYE11-45	4.9	2.5	5.5	15.8	8.3	6.3	1.0	0.2	0.0	0.0	0.0
Pike	5.3	1.5	6.0	14.1	5.4	6.9	1.9	0.0	0.0	0.0	10.0
Snowden	4.6	1.0	5.6	18.9	11.0	7.1	0.7	0.1	2.5	7.5	2.5
St. Johns	4.4	3.5	5.3	29.6	13.0	10.0	6.2	0.4	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 9. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the Cornell advanced clones trial grown at Freeville, New York - 1995.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.
			1	2	3	4	5	1 7/8-4"	2 1/2-4"		
Atlantic Katahdin (std)	424 405	327 253	129 100	4 5	26 24	53 49	13 14	4 8	92 87	6.9 6.3	88 74
Monona P1-101	291 417	184 343	73 135	5 6	30 44	40 42	17 6	8 2	87 92	4.9 8.3	72 77
P7-19 P13-110	448 360	365 297	144 117	5 4	30 28	52 52	10 13	3 3	92 93	7.6 6.0	81 65
P18-8 P23-17	374 361	303 274	120 108	5 4	35 20	51 51	7 16	3 9	92 87	6.9 5.6	81 75
P23-31 P29-1	362 302	280 203	111 80	9 2	36 14	49 47	4 22	2 15	89 83	7.5 3.9	74 73
P29-2 Snowden	398 440	306 262	121 103	11 5	50 21	30 42	7 17	1 15	88 80	9.1 6.6	79 85
Waller-Duncan LSD (k=100)	38	30								0.5 0.6	3
C.V. (%)	(7)	(8)								(6) (7)	(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 9

Vine-kill date: September 6

Harvest date: September 27

Upstate New York Table 10. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the Cornell advanced clones trial grown at Freeville, New York - 1995.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Atlantic Katahdin (std)	5.8	1.8	7.3	14.5	6.8	4.5	2.8	0.4	17.5	0.0	2.5
	6.9	3.8	4.9	24.3	15.6	6.3	2.2	0.2	5.0	2.5	0.0
Monona P1-101	5.3	5.0	4.0	22.9	4.8	15.7	1.8	0.6	2.5	0.0	0.0
	2.0	3.5	5.4	9.8	1.7	7.8	0.0	0.3	0.0	0.0	0.0
P7-19 P13-110	6.4	2.8	7.0	10.4	8.4	1.2	0.7	0.2	5.0	0.0	0.0
	1.6	1.5	6.6	10.6	4.0	4.8	1.9	0.0	0.0	0.0	0.0
P18-8 P23-17	5.3	3.8	5.3	11.1	5.0	4.6	1.5	0.0	5.0	2.5	0.0
	3.6	2.4	5.9	11.0	6.4	2.6	2.0	0.0	2.5	0.0	0.0
P23-31 P29-1	3.1	2.9	7.3	11.7	6.5	3.4	0.7	1.1	5.0	0.0	0.0
	2.0	4.0	5.3	14.9	3.3	9.8	1.9	0.0	0.0	0.0	0.0
P29-2 Snowden	2.9	3.8	5.0	10.9	2.3	7.3	0.8	0.4	0.0	0.0	5.0
	7.2	1.3	6.0	20.1	12.7	5.0	2.0	0.3	0.0	3.3	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 11. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the red/purple-skinned variety trial grown at Freeville, New York - 1995.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.
			1	2	3	4	5	1 7/8-4"	2 1/2-4"		
B0811-13	338	290	90	8	57	31	4	0	92	35	72
B0852-7	323	281	87	5	43	45	7	1	94	51	76
B0967-11	436	286	89	3	21	46	15	15	82	61	76
B0984-1	269	221	68	4	39	39	10	8	88	50	75
B1145-2	227	167	52	20	70	8	2	0	80	10	61
Cherry Red	301	221	69	4	38	44	12	2	94	56	73
Chieftain (std)	387	323	100	5	33	48	9	5	90	57	62
Dark Red Norland	296	243	75	6	55	34	5	1	93	39	59
Desiree	326	219	68	15	61	23	1	0	85	24	74
N38-1R	319	261	81	14	49	34	2	1	86	36	68
N38-4R	291	243	75	8	40	43	8	1	91	50	64
N38-5R	303	254	79	7	45	40	5	3	91	45	73
N51-1R	403	294	91	6	28	42	15	9	85	57	63
ND1871-3R	357	296	92	13	70	15	3	0	87	18	67
P49-3R	254	193	60	12	48	37	3	0	88	40	73
P49-13R	422	371	115	6	49	40	5	0	94	45	65
P49-19R	399	315	97	9	45	40	5	1	91	46	63
P49-20R	412	327	101	5	41	43	7	3	92	50	59
P50-4R	326	280	87	6	44	41	8	1	93	49	61
Red Ruby	329	248	77	15	64	19	2	0	85	21	69
Redsen	274	203	63	11	56	28	6	0	89	34	63
Waller-Duncan											
LSD (k=100)	47	45								0.8	0.8
C.V. (%)	(11)	(13)								(9)	(13)
										(3)	(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 10

Vine-kill date (mowed): August 28

Harvest date: September 6

Upstate New York Table 12. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the red/purple-skinned variety trial grown at Freeville, New York - 1995.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
B0811-13	3.4	4.0	4.3	6.2	0.8	3.5	1.9	0.0	0.0	0.0	0.0
B0852-7	3.1	3.0	7.0	7.0	1.8	3.2	2.0	0.0	2.5	0.0	0.0
B0967-11	5.6	4.0	5.0	15.9	1.4	6.2	8.3	0.0	0.0	0.0	0.0
B0984-1	3.9	2.0	6.4	6.4	0.1	5.1	1.1	0.0	0.0	2.5	0.0
B1145-2	1.1	1.0	6.5	8.3	0.3	4.7	3.3	0.0	0.0	0.0	0.0
Cherry Red	2.3	4.0	6.5	20.1	2.2	4.8	12.8	0.3	12.5	0.0	0.0
Chieftain (std)	3.4	3.0	6.5	6.7	1.3	3.0	2.4	0.0	0.0	0.0	5.0
Dark Red Norland	1.5	3.0	6.8	11.2	0.5	6.4	4.3	0.0	0.0	0.0	0.0
Desiree	8.0	3.0	3.0	18.1	1.4	15.4	1.1	0.3	0.0	0.0	0.0
N38-1R	4.0	2.3	7.4	3.3	0.6	1.5	1.2	0.0	0.0	0.0	0.0
N38-4R	4.6	5.0	5.3	7.8	1.0	3.2	3.5	0.0	0.0	0.0	0.0
N38-5R	3.6	1.0	7.4	7.4	1.5	3.8	2.1	0.0	0.0	0.0	0.0
N51-1R	5.5	2.0	5.6	10.9	4.2	4.6	1.6	0.5	0.0	0.0	0.0
ND1871-3R	4.6	1.8	7.0	4.5	1.2	3.0	0.3	0.0	0.0	0.0	0.0
P49-3R	6.5	3.0	7.0	11.1	1.0	5.6	4.5	0.0	0.0	0.0	0.0
P49-13R	5.5	3.0	6.5	6.4	0.6	4.4	1.3	0.0	0.0	2.5	0.0
P49-19R	6.3	1.5	7.6	12.4	2.6	6.2	3.5	0.0	0.0	2.5	0.0
P49-20R	5.3	3.0	4.3	12.1	1.1	5.1	5.8	0.0	0.0	2.5	0.0
P50-4R	4.9	2.0	6.5	7.2	0.3	4.6	2.3	0.0	0.0	0.0	0.0
Red Ruby	5.1	5.0	4.8	10.4	1.2	7.0	2.2	0.0	0.0	0.0	0.0
Redsen	1.3	1.0	8.0	15.1	0.4	9.8	4.9	0.0	0.0	2.5	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 13. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the russet trial grown at Freeville, New York - 1995.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)				Mean Tuber #/ft wt(oz)	Spec. Grav.	
			1	2	3	4	5	4 to over						
								12 oz	8 oz	12 oz				
AF1481-4	283	179	126	16	41	32	10	1	73	43	11	5.3	5.6	74
BelRus	308	203	143	22	46	19	10	3	65	32	13	6.0	5.3	75
B0950-6	318	188	133	12	31	34	20	3	65	57	23	5.0	6.7	71
B1004-8	392	258	182	16	45	28	8	3	73	39	11	6.9	5.9	75
B9922-11	314	203	143	15	46	28	8	3	74	39	11	5.8	5.7	80
Rus. Burbank (std)	401	142	100	25	45	23	8	0	68	31	8	8.7	4.8	76
Waller-Duncan LSD (k=100)	27	38										0.6	0.6	2
C.V. (%)	(6)	(13)										(7)	(7)	(2)

¹Size classes: 1 = under 4 oz, 2 = 4 to 8 oz, 3 = 8 to 12 oz, 4 = 12 to 16 oz, 5 = over 16 oz

Plant date: May 1

Vine-kill date: August 28

Harvest date: September 5

Upstate New York Table 14. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the russet variety trial grown at Freeville, New York - 1995.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
AF1481-4	2.1	7.0	7.0	19.8	5.5	8.8	5.5	0.0	5.0	0.0	0.0
Be1Rus	1.5	6.0	8.0	9.4	2.5	6.4	0.5	0.0	0.0	0.0	0.0
B0950-6	2.8	7.0	7.3	25.9	5.5	11.0	9.4	0.0	30.0	0.0	2.5
B1004-8	5.1	6.0	7.0	15.1	2.1	3.6	9.4	0.0	5.0	0.0	0.0
B9922-11	3.8	5.0	6.5	17.1	4.9	6.7	5.4	0.0	7.5	0.0	0.0
Rus. Burbank (std)	4.8	7.0	5.0	40.0	7.5	23.5	8.3	0.7	2.5	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 15. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the U. of Maine and USDA clones trial grown at Freeville, New York - 1995.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.	
									1 7/8-4"	2 1/2-4"			
				1	2	3	4	5					
Atlantic	407	346	116	6	35	46	10	2	91	56	7.5	5.7	89
AF1331-2	317	257	86	9	47	37	6	1	90	43	6.8	4.9	70
AF1425-1	333	279	94	12	59	28	2	0	88	29	8.1	4.3	69
AF1656-4	368	229	77	3	20	37	18	21	76	55	4.9	7.8	71
AF1657-3	357	252	85	12	40	36	10	2	86	46	8.1	4.6	71
AF1675-1	370	283	95	7	38	40	16	0	93	56	6.8	5.6	77
B0585-5	353	276	93	5	36	46	9	5	91	55	6.4	5.8	75
B0684-5	372	324	109	4	31	46	14	4	91	61	5.9	6.6	67
B0766-3	312	262	88	9	44	36	10	2	89	46	6.4	5.0	78
B0892-7	385	329	110	13	64	23	1	0	87	24	10.1	4.0	88
B1029-6	433	380	127	7	41	43	8	2	92	50	8.7	5.2	82
B1150-5	419	359	120	10	58	30	2	1	89	31	9.4	4.6	62
B1191-2	445	355	119	4	28	43	14	11	85	57	7.0	6.6	60
Katahdin (std)	369	298	100	6	34	41	14	4	90	56	6.6	5.8	68
MaineChip	367	312	105	7	46	40	7	1	92	46	7.2	5.3	90
Monona	308	267	90	7	38	41	10	4	89	51	6.3	5.1	69
Norwis	403	354	119	4	26	49	17	4	92	66	6.7	6.2	67
Snowden	435	374	125	11	69	19	1	0	89	20	11.3	4.0	86
Waller-Duncan													
LSD (k=100)	57	45									0.8	0.7	2
C.V. (%)	(11)	(11)									(8)	(10)	(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 2

Vine-kill date (mowed): August 28

Harvest date: August 29

Upstate New York Table 16. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the U. of Maine and USDA advanced clones trial grown at Freeville, New York - 1995.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Atlantic	5.5	1.0	5.0	6.4	3.9	1.5	1.0	0.0	22.5	0.0	5.0
AF1331-2	1.4	2.0	5.9	8.6	2.0	2.9	3.5	0.1	0.0	15.0	0.0
AF1425-1	1.3	2.0	8.0	4.7	3.1	1.4	0.2	0.0	0.0	0.0	0.0
AF1656-4	3.9	3.0	4.8	14.0	7.2	1.4	5.2	0.1	2.5	12.5	2.5
AF1657-3	2.1	3.0	4.8	15.1	2.0	10.5	2.5	0.1	0.0	10.0	2.5
AF1675-1	3.4	3.0	3.8	16.1	2.7	4.1	9.3	0.0	0.0	0.0	5.0
B0585-5	2.3	1.0	8.0	12.3	4.1	1.2	6.6	0.4	12.5	0.0	0.0
B0684-5	3.3	2.0	7.5	4.2	2.0	1.4	0.8	0.0	5.0	0.0	0.0
B0766-3	3.3	2.0	5.0	5.3	1.0	0.7	3.6	0.0	2.5	0.0	0.0
B0892-7	4.6	2.0	6.1	1.9	1.1	0.9	0.0	0.0	0.0	0.0	0.0
B1029-6	5.8	1.0	7.5	3.9	2.3	0.9	0.6	0.1	22.5	0.0	2.5
B1150-5	4.0	1.0	6.5	3.9	1.4	2.0	0.5	0.0	0.0	0.0	2.5
B1191-2	2.0	2.0	5.3	4.8	1.8	2.2	0.8	0.1	0.0	2.5	0.0
Katahdin (std)	5.9	2.0	4.0	9.3	6.7	2.0	0.6	0.1	5.0	2.5	2.5
MaineChip	4.6	2.0	5.0	7.1	3.6	2.1	1.3	0.2	2.5	0.0	0.0
Monona	5.1	2.0	3.3	2.0	0.7	1.3	0.0	0.0	0.0	0.0	2.5
Norwis	4.4	3.0	4.3	3.9	1.3	1.2	1.3	0.0	0.0	0.0	5.0
Snowden	5.3	2.0	4.9	2.9	1.7	0.9	0.1	0.2	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 17. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Franklin County mineral soil variety trial grown near Chateaugay, New York - 1995.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec. Grav.
			1	2	3		S	K	G	R	H	V	N		
CF7523-1	417	288	126	11	82	8	9.4	4.9	11	1	0	0	5	0	71
Genesee	347	218	95	7	78	15	5.4	7.1	11	1	3	0	0	0	72
Katahdin (std)	351	229	100	12	87	1	8.1	4.8	17	1	3	0	0	0	84
L235-4	482	376	164	8	90	2	9.0	5.9	5	1	5	0	5	0	77
N15-3	343	201	88	20	80	0	9.7	3.9	19	2	0	0	0	0	92
N38-5R ⁴	405	315	137	11	87	3	9.0	5.0	1	1	7	0	0	0	67
N50-3	358	243	106	8	82	10	7.1	5.5	11	0	3	0	5	0	84
N51-1R ⁴	388	273	119	8	78	13	7.4	5.8	1	5	2	0	0	0	69
NY101	467	394	172	10	90	0	10.5	4.9	5	0	0	0	0	0	80
NY103	432	310	135	10	88	2	9.5	5.0	15	1	0	0	15	0	77
NY109 (M19-3)	469	363	158	5	88	7	7.4	6.9	9	0	1	0	0	0	64
NYE11-45	471	374	163	9	88	3	10.6	4.9	9	0	0	0	0	0	70
P23-31	352	250	109	7	82	11	5.8	6.6	9	1	0	0	0	0	76
Redsen ⁴	325	243	106	18	81	1	8.9	4.0	2	1	4	0	0	0	61
St. Johns	406	268	117	5	79	16	6.2	7.2	8	1	4	0	0	0	71
Superior	424	342	149	9	89	2	8.6	5.4	5	2	2	0	5	0	82
Waller-Duncan															
LSD (k=100)	126	83					4.0	1.5							
C.V. (%)	(12)	(13)					(18)	(12)							

¹Size categories: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot.

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

⁴These are red-skinned cultivars. All others are white-skinned.

NOTE: This trial had two replications.

Plant date: May 25

Fertilizer: 1400 lb/A 10-20-20 at planting.

Vine-kill date: September 5

Vine-kill: Diquat 1 pt/A

Harvest date: Sept.19

Irrigation: None

Upstate New York Table 18. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Orleans County muck soil variety trial grown near Elba, New York - 1995.

Variety or Clone	Total Yield cwt/A	Mkt. Yield		Size Distrib. ¹			Mean Tuber #/ft wt(oz)	Pct. External ²				Pct. Internal ³				Spec. Grav.	
		% of std.	cwt/A	(% of Tot. Yld.)				S	Tuber Defects			Tuber Defects		H	Tuber Defects		
				1	2	3			K	G	R	V	N				
Andover	362	286	120	16	84	0	9.4	4.0	3	1	1	0	5	0	0	83	
CF7523-1	470	323	136	11	85	4	9.3	5.3	13	3	1	0	0	0	0	72	
Chieftain ⁴	501	405	170	6	87	7	8.8	5.9	3	2	2	0	0	0	0	69	
Genesee	231	157	66	10	87	3	4.6	5.2	19	0	0	0	0	0	0	60	
Katahdin (std)	291	238	100	8	92	0	6.2	4.9	6	0	3	1	10	0	0	64	
L235-4	297	153	64	10	80	10	6.1	5.1	14	2	12	0	0	0	0	71	
N38-1R ⁴	264	222	93	12	88	0	6.4	4.3	2	0	2	0	0	0	0	69	
N38-4R ⁴	425	238	100	7	79	14	6.8	6.5	4	1	18	0	0	0	0	62	
N38-5R ⁴	340	287	121	10	90	0	8.3	4.2	3	0	2	0	0	0	0	71	
N51-1R ⁴	350	253	106	10	80	9	7.5	4.8	6	2	0	0	0	0	0	68	
ND1871-3R ⁴	368	273	115	14	85	1	9.3	4.1	10	0	0	0	0	0	0	66	
NY84	345	290	122	8	91	1	6.8	5.3	7	0	0	0	0	15	0	61	
NY87	407	299	126	7	83	10	6.5	6.5	7	3	0	0	0	0	0	68	
NY101	549	450	189	7	88	6	9.8	5.8	4	2	0	0	0	0	0	67	
NY103	290	191	80	13	78	9	6.1	5.0	9	3	0	0	0	0	0	69	
NY109 (M19-3)	379	268	113	8	83	9	6.4	6.2	7	1	5	0	0	0	0	62	
NYE11-45	386	316	133	10	87	3	8.3	4.8	4	1	0	0	0	0	0	62	
St. Johns	312	221	93	10	83	7	5.9	5.5	7	1	5	0	0	0	0	68	
Waller-Duncan																	
LSD (k=100)	88	96					1.8	0.9									
C.V. (%)	(12)	(16)					(11)	(24)									

¹Size categories: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot.

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

⁴These are red-skinned cultivars. All others are white-skinned.

NOTE: This trial had two replications.

Plant date: May 31

Fertilizer: Broadcast 1000 lb/A 12-10-24.

Vine-kill: Manex 1 qt/A + Diquat 1 pt/A + L-700 1 pt/A; second application: Diquat 1 pt/A + L-700 1 pt/A

Vine-kill dates: Sept. 13 and 21

Irrigation: None

Harvest date: Oct. 17

Upstate New York Table 19. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Steuben County mineral soil variety trial grown near Arkport, New York - 1995.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec. Grav.
			1	2	3		S	K	G	R	H	V	N		
Andover	238	199	76	6	87	7	4.6	5.7	1	0	1	0	0	0	91
Atlantic	303	223	85	5	82	13	5.4	6.2	3	6	0	0	20	0	104
B0178-34	272	209	80	7	84	9	5.1	5.9	1	5	0	0	0	0	103
B0564-8	332	280	107	9	86	4	7.6	4.9	2	0	0	0	5	0	88
Kanona	289	225	86	6	82	12	5.1	6.2	4	0	0	0	0	0	85
Monona (std)	351	262	100	9	86	6	7.1	5.4	8	3	0	0	0	0	80
M19-4	325	244	93	5	85	10	6.0	6.0	9	1	0	0	0	0	83
NY87	361	266	102	3	80	17	5.5	7.2	6	0	0	0	5	0	84
NY102	312	255	97	11	87	2	8.3	4.1	2	2	1	0	0	0	100
NY103	380	268	102	6	79	14	6.5	6.4	4	3	0	0	0	0	91
NY105	327	224	85	5	77	18	6.0	6.0	8	0	0	0	0	0	86
NY107 (M14-1)	272	186	71	7	76	17	5.0	6.0	4	1	2	0	0	0	96
NYE11-45	485	392	150	6	86	8	9.2	5.8	4	1	0	0	0	0	77
Pike	309	260	99	10	88	2	6.3	5.4	4	0	0	0	5	0	99
Snowden	267	230	88	11	89	0	6.7	4.4	1	1	0	0	10	0	99
Waller-Duncan															
LSD (k=100)	128	96					2.3	1.8							6
C.V. (%)	(16)	(16)					(15)	(12)							(3)

¹Size categories: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot.

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial had two replications.

Plant date: May 12

Vine-kill dates: Sept. 12 and 17

Harvest date: Sept. 28

Fertilizer: 1600 lb/A 8-16-8 at planting + 3 gal/A CaNO₃ (21% N) sprayed on foliage.

Vine-kill: 1 pt/A Diquat, two applications

Irrigation: One time (approx. 1.5")

Upstate New York Table 20. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Wyoming County mineral soil variety trial grown near Gainesville, New York - 1995.

Variety or Clone	Total Yield cwt/A	Mkt. Yield		Size Distrib. ¹			Mean Tuber #/ft wt(oz)	Pct. External ²					Pct. Internal ³					Spec. Grav.
		cwt/A	std.	(% of Tot. Yld.)				Tuber Defects					Tuber Defects					
				1	2	3		S	K	G	R	H	V	N				
Andover	448	356	146	8	90	2	9.7	5.1	7	2	1	0	10	0	0	75		
Atlantic	370	264	108	7	87	6	6.9	5.9	10	4	2	0	40	0	0	90		
B0178-34	435	321	131	7	88	5	8.4	5.7	8	4	1	0	15	0	5	92		
B0564-8	395	318	130	13	87	0	10.5	4.1	4	1	1	0	15	0	10	75		
Kanona	389	209	85	6	73	22	6.1	7.1	17	1	1	0	0	0	0	76		
Monona (std)	363	244	100	9	83	8	6.2	6.5	10	5	0	0	30	0	0	73		
M19-4	370	258	106	11	85	4	7.5	5.5	15	1	0	0	5	0	0	74		
NY87	447	344	141	9	89	2	9.4	5.2	11	1	0	0	15	0	0	72		
NY102	356	269	110	11	85	4	7.8	5.0	8	0	1	0	5	0	5	83		
NY103	475	361	148	7	87	6	8.9	5.9	10	1	0	0	0	0	0	78		
NY105	403	198	81	9	73	18	7.1	6.3	18	5	0	1	5	0	0	76		
NY107 (M14-1)	393	265	109	10	87	3	8.7	5.0	17	2	0	0	0	0	0	78		
NYE11-45	502	363	149	10	88	2	11.1	5.0	13	2	1	0	5	0	0	66		
Pike	399	308	126	11	88	1	10.0	4.4	10	0	0	0	5	0	5	84		
Snowden	440	331	136	13	87	0	11.3	4.3	10	2	0	0	35	0	0	84		
Waller-Duncan																		
LSD (k=100)	62	61					2.3	1.6								5		
C.V. (%)	(7)	(10)					(12)	(12)								(3)		

¹Size categories: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot.

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial had two replications.

Plant date: May 5

Vine-kill dates: Sept. 9 and 14

Harvest date: Sept. 26

Fertilizer: 1300 lb/A 8-12-16-0.8Mg at planting. Top-dressed 500 lb/A CaNO₃ at 8" plant height.

Vine-kill: 1 pt/A Diquat, two applications
Irrigation: Three times (minimum of 1")

New York

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Early Generations

The crossing program produced 66 round white combinations with chipping and tablestock potential, 8 red combinations, 31 trichome hybrids, 7 segregating for resistance to late blight and five races of cyst nematodes, and 12 combinations segregating for resistance to *Pratylenchus penetrans* and two races of *Globodera rostochiensis*.

Seeds produced in 1994 (T's) were sown and the seedlings were transplanted to six inch pots. Four tubers were saved from each, after selecting for tuber color in the trichome and red progenies. There were 3032 round whites, 2029 reds, 2614 *Globodera pallida* resistant (including 697 with late blight resistance), 873 with *Pratylenchus penetrans* resistance, 8166 with trichomes, and 2505 neotuberosum hybrids with late blight resistance.

The four hill seedling populations (S's) started with 8888 round whites. At harvest 787 were selected for tuber type, then stored at 45° for one month prior to chipping and testing for resistance to the golden nematode. Ultimately, 455 were saved. The 1555 reds were selected for shape and tuber color, then golden nematode resistance, and 114 saved.

The 12,538 trichome clones were selected for tuber type at harvest, then for chip color and resistance to the golden nematode. The latter test is incomplete, but 860 are expected to be saved.

The third year generation (R's) consisted of 817 clones in 24 hill plots. At harvest 162 were saved and following winter evaluations for chip color, specific gravity, and golden nematode resistance, 76 were saved.

Intermediate Generations

The fourth year selections (P's and Q's) were grown as 100 hill plots for seed production and selection and in two row by 20-foot plots for observation and chip samples. From the 101 that were grown, 20 have survived the fall selection and post harvest tests.

The fifth generation (N's and P's) were grown in 400 hill seed plots and a replicated yield trial. The 12 at this stage of selection were reduced to 6 and are being introduced to virus-free *in vitro* production. All are

round white clones and four have chipping potential.

Advanced Generations

A summary of the performance of the most advanced clones is as follows:

NY84 = D146-11 = Rosa x NY66 (1980). Midseason tablestock. High yielding and scab resistant. Yield at Ellis Hollow and Mt. Pleasant over five seasons in cwt/A: NY84 = 447, Atlantic = 433. In five seasons at Riverhead, NY84 yielded an average of 115% of Katahdin and Norwis yielded 141% of Katahdin. In 1995, at two upstate sites, NY84 yielded 112% of Atlantic. Bright skin. Nice shape, slightly flat. Early emerging, attractive vigorous vine. Early sizing. In eight seasons, yields on August 1 were 90% of Superior. Few pickouts and internal defects. Specific gravity like Monona. Good cooking qualities, slight yellowish cast when boiled. Slight sloughing. Tuber dormancy two weeks longer than Katahdin or Atlantic. Resistant to golden nematode and good scab resistance.

NYE11-45 = Rosa x Q155-3 (1981). Midseason to late season chipstock and tablestock. High yields. Yield at Ellis Hollow and Mt. Pleasant over seven seasons in cwt/A: E11-45 = 437, Atlantic = 410. 120% of Monona in seven years in Steuben and Wyoming Counties. In five seasons at Riverhead, NYE11-45 yielded an average of 117% of Katahdin and Norwis yielded 141% of Katahdin. In 1995 at six upstate sites, NYE11-45 yielded 117% of Atlantic. Bright white skin. Attractive shape, somewhat flattened. Generally few internal defects and pickouts. Specific gravity and dormancy like Monona. Acceptable boiling qualities. Chip color equal to Atlantic from the field and equal to or better than Monona from storage at 45°. Resistant to the golden nematode. Scab resistance like Monona.

Pike = NYE55-35 = Allegany x Atlantic (1981). Mid-late season chipstock with high specific gravity and very good scab resistance. Yield of US #1 in seven years on Mt. Pleasant and Ellis Hollow in cwt/A: Pike = 372, Atlantic = 376. In 1995, at six upstate sites Pike yielded 97% of Atlantic and 103% of Snowden. Tends to have about 40% in the 1-7/8" to 2-1/2" size. 10" spacing seems to give best yield and size. Irrigation improves yield without much effect on tuber size. Generally free of pickouts and hollow heart. Attractive tuber shape. Netted skin, free of blemishes. Specific gravity equal to Atlantic and Snowden. Chip color similar to Monona from 48° and 45° storage. Good early vine growth, medium vigor at end of season, but better than Monona. Resistant to the golden nematode and very resistant to scab, comparable to Superior. In

1995, internal heat necrosis occurred at some locations. The necrosis was net-like and generally in the center of the tuber. There was less hollow heart than in Atlantic and Snowden.

Andover = NYE55-44 = Allegany x Atlantic (1981). Early to midseason table and chipstock. Very rapid emergence and early set. In eight trials in Ellis Hollow during the past seven years, Andover has produced 278 cwt/A in early August and Superior 276 cwt/A. At full season on Mt. Pleasant and Ellis Hollow for seven seasons, Andover has produced 349 cwt/A compared to 410 for Atlantic. In 1995 at six sites, Andover had a US #1 marketable yield 92% that of Atlantic. The yielding ability of Andover appears to be susceptible to drought and heat stress. Attractive tuber shape. Skin texture like Superior. Large tuber size. Yields of Andover at 6" was better than at 9" in 1995. Small percentage of pickouts and internal defects. Specific gravity is higher than Superior. Excellent chip color from the field under a range of environments, from 48° and 45° storage and from 40° with reconditioning. Good boiling and baking properties. Tuber dormancy is two weeks longer than Atlantic. Exceptionally rapid early growth, but vines tend to decline in mid August. May be sensitive to air pollution. Scab reaction like Monona. Resistant to golden nematode and possibly to powdery scab.

NY87 = F24-12 = Monona x Allegany (1982). Mid-late season chip and tablestock. High yields, early sizing, and large tuber size. Yield at Mt. Pleasant and Ellis Hollow over seven seasons in cwt/A: NY87 = 423, Atlantic = 374. In five seasons at Riverhead, NY87 yielded an average of 116% of Katahdin and Norwis yielded 133% of Katahdin. In 1995 at six upstate sites, NY87 yielded 103% of Atlantic. Early sizing, 92% of yield of Superior in early August (six years). Very few pickouts. Some hollow heart in large tubers, but less than Atlantic. Good tuber shape and bright skin. Appearance better at narrower spacing. Specific gravity better than Monona. Good chip color from the field and 48° and 45° storage. Two weeks longer dormancy than Katahdin and Atlantic. Nice vine type with large leaflets. Good boiling quality. Resistant to golden nematode and scab resistance like Monona. There was considerable pink rot in tubers on Mt. Pleasant in 1995.

NY101 = K7-1 = Steuben x Norwis (1986). Mid-late season tablestock. Pale yellow flesh. Scurfy skin. Exceptionally high yields of large round tubers. Yield at Mt. Pleasant and Ellis Hollow for five seasons cwt/A: NY101 = 428, Atlantic = 395. At four sites in 1995, NY101 yielded 114% of Atlantic and at two sites was

151% of Katahdin. Early sizing. Large tuber size. Very round. Very few pickouts. In prior years there have been few defects upstate, but have been present on Long Island. In 1995 internal necrosis occurred in two Ithaca trials. Scab resistance like Superior. Specific gravity like Katahdin. Very nice vine growth and appearance. Resistant to golden nematode.

NY102 = K9-29 = Steuben x Kanona (1986). Midseason chipstock. Yielded 97% of Kanona in six trials in 1993, 94% of Kanona in five trials in 1994, and equal to Kanona in 1995. Small-medium tuber size. Very few pickouts. Bright skin. Scab resistance between Monona and Superior. Specific gravity like Atlantic. Very good chip color from 45° storage. The 1994 crop had average chip scores from field and 45° storage of 3.2 for NY102, 3.0 for Snowden, and 3.8 for Kanona. Tuber dormancy two weeks longer than Monona. Fair vine growth. Resistant to golden nematode.

NY103 = K88-24 = Steuben x (Neotbr x thr) (1986). Midseason table and chipstock. Yield of US #1 relative to Atlantic was 91% at five upstate sites in 1993 and was 118% at seven upstate sites in 1994 and 114% at six sites in 1995. In two years at Riverhead, NY103 yielded 110% of Katahdin. Outstanding tuber appearance. Very bright, blemish-free skin. Round shape. Medium sized tubers. Upstate almost free of pickouts and internal defects. Scab resistance like Monona. Tuber dormancy seven weeks longer than Katahdin and Monona. Nice vine type. Specific gravity .012 less than Atlantic (21 trials, 3 years). Chip color like Monona. In 1994 after 45° storage the score for NY103 was 4.1 compared with 4.2 for Monona. The Agron for NY103 was 54 compared with 55 for Monona. Resistant to golden nematode, PVX and PVY.

NY107 = M14-1 = Atlantic x Kanona (1988). Late season chipstock. Agron of the 1993 and 1994 crops was 54 compared with 52 for Atlantic and 53 for Kanona from 45° storage. Specific gravity in four years has been .005 less than Atlantic. Marketable yields in 1994 and 1995 were about 89% of Atlantic. Fewer pickouts than Atlantic. Very little brown center and hollow heart. Very little internal necrosis. Tuber appearance slightly better than Atlantic. Very scurfy skin texture. Scab resistance better than Atlantic. Rapid emergence, large attractive vine. Resistant to the golden nematode.

NY108 = M14-6 = Atlantic x Kanona (1988). Late season tablestock. Marketable yields in 1994 and 1995 were about 76% of Atlantic. Yield on Long Island in 1995 was greater than Superior. Tuber size is

especially large. Fewer pickouts than Atlantic. Very little brown center and hollow heart. Very little internal necrosis. Very smooth round tuber shape. Very scurfy skin texture. Specific gravity in four years is .009 less than Atlantic. Scab resistance like Superior. Delayed emergence. Medium size, attractive vine. Resistant to the golden nematode.

NY109 = M19-3 = Allegany x Q155-3 (1988). Mid-early tablestock. Full season marketable yields in 1994 and 1995 were equal to Atlantic, early yield in 1995 was equal to Superior and yield at Riverhead was greater than Superior. Large tuber size. Fewer pickouts than Atlantic. Very little brown center and hollow heart. No internal necrosis in 1994, but equal to Atlantic in 1995. Exceptionally attractive tuber shape. Very bright skin with prominent lenticels, occasionally infected. Specific gravity in four years was .019 less than Atlantic. Scab resistance like Superior. Attractive vine. Resistant to the golden nematode.

NY110 = M28-3 = Pike x Q155-3 (1988). Late season tablestock (possibly chipstock). Full season marketable yields in 1994 and 1995 were 91% of Atlantic. Early harvest yield 125% of Superior. Yield at Riverhead was 130% of Superior. Tuber size is very large. Fewer pickouts than Atlantic. Very little brown center and hollow heart. No internal necrosis in 1994 and 1995. Good tuber shape. Very bright skin. Specific gravity in four years is .011 less than Atlantic. Scab resistance like Atlantic. Medium plant size. Rugose leaflets. Resistant to the golden nematode.

NY111 = M39-4 = D147-9 x Atlantic (1988). Late season chipstock. Agronomy of the 1994 crop was 56 compared with 51 for Atlantic and 56 for Snowden. Specific gravity in four years has been .001 greater than Atlantic. Marketable yields in 1994 and 1995 were 91% of Atlantic. Small tuber size. Fewer pickouts than Atlantic. Hollow heart has been equal to Atlantic for 1994 and 1995. Very little internal necrosis. Acceptable tuber shape, somewhat deep apical eyes. Scab resistance like Superior. Large attractive vine. Resistant to the golden nematode.

Introduction:

Experiments conducted in 1995 are part of an ongoing program evaluating promising golden nematode resistant and russet-and red-skinned potato clones under Long Island conditions. Forty-nine potato clones were evaluated in replicated experiments conducted at the Long Island Horticultural Research Laboratory (LIHRL). In addition, fifty white-, ten red- and two russet-skinned clones were included in an observation trial. Data were collected on total and marketable yields, size distribution, internal and external defects, and general appearance of potato tubers.

Methods:

1995 was another hot and dry year. Irrigation of approximately 1.3 inches was applied on a weekly basis for most of the season (about 8.0 inches were applied from 6/23 to 8/3/95). The randomized complete block design with four replications was used in all the experiments. Variety plot size was 2 rows by 12 feet. Fertilizer was applied at a rate of 1000 lbs/A of 10-20-20 in bands at time of planting (4/6-7/95). An additional 60 lbs N/A were applied when plants were 4 to 6 inches tall. The early experiment was rated for vine maturity on 8/1/95, plants were vine killed on 8/8/95 and yield data were collected on 8/29/95. Vines in other experiments lost vigor by mid August and were vine killed on 8/23/95 and were harvested on 9/5-19/95. Specific gravity was determined by the hydrometer method. Internal defects were determined on 10 tubers per replication in the 3.3 to 4 inch or 12 to 16 oz. categories for round and russet experiments, respectively. Tables summarize maturity ratings, tuber appearance and shape. Vine maturity ratings were based on a scale of 1 to 9, 1 = completely dead, 9 = green and vigorous. Appearance ratings were based on a scale of 1 to 9, 1 = extremely poor, 9 = excellent appearance. Shape abbreviations are R = round, O = oblong, L = long. Other data on

tuber appearance, shape, skin color and texture and eye-depth are listed in Table 1. Abbreviations for the descriptions are also listed for that table.

An experiment to determine the effect of nitrogen rate on vigor, ozone injury symptoms and yield of Andover, Norland and Superior was established on 4/11/95. Plot size was 4 rows x 25 feet long with the center 2 rows x 20 feet used for data. All plots received 200 lbs/A of phosphate and potash and 50 lbs of MgO/A. Plants were vine killed on 9/8/95 and harvested on 9/11/95. Only yield data are presented in this publication.

The effect of three pre-emergence rates of metribuzin on plant injury and yield was investigated in an experiment planted on 4/7/95. Metribuzin treatments of 0, 0.5 and 1.0 lbs/A were applied on 4/20/95 before sprout emergence. Plots were 2 rows x 20 feet with the center 15 feet used for data. Plants were vine killed on 8/23/95 and tubers were harvested 10/2/95.

Early White-skinned Clones:

Andover, Superior, AF875-15, AF1331-2 and NY87 produced similar total and marketable yields. AF1379-3 tubers had the best appearance ratings and the smallest size. Andover tubers were attractive and had the highest specific gravity.

NE107 White-skinned Clones:

All entries produced yields greater than Katahdin. Atlantic, Snowden and St. Johns produced the highest marketable yields. Internal defects were prevalent in Atlantic, St. Johns, ND2471-8 and NY87. AF1438-5 tubers were the most attractive while Snowden and ND2471-8 were the least attractive.

White-skinned Entries from NE Potato Breeding Programs:

The highest marketable yields were produced by B0178-34, NY87, NYM14-6 and NYM19-3. Tubers of NYM19-3 were attractive with a white, relatively smooth skin. NYM14-6 tubers were round, relatively attractive but were heavily netted and may not be accepted in the traditionally smooth, round, white market. Internal defects were found in many of the entries but were especially severe in Norwis, AF1470-17, B0178-34, and B1016-3.

Red-skinned Clones:

The highest marketable yield was produced by the purple-skinned clone, B0903-2. Tubers of this clone are oblong and have a smooth skin. Chieftain and Cherry Red produced similar yields. Both were plagued with internal defects. B0811-13 tubers have a slightly netted, deep red color and moderately deep eyes. The flesh of this clone is deep yellow and may fit in well for a specialized market.

Russet-skinned Clones:

Only BelRus and AF1481-4 produced yields significantly lower than the highest yielding clone, B0493-8. Tubers of the latter clone are long with brown, heavily russeted skin. The best appearing russets were Coastal Russet, AF1481-4, B0835-11 and B9922-11.

N Rate X Three Varieties:

Nitrogen rates in increments of 50 lbs/A ranging from 100 to 250 lbs/A did not significantly affect total or marketable yields of Andover, Norland, and Superior. The higher rates tended to keep plants green longer. The effect on the foliage did not translate into an effect on tuber yield.

Andover and Superior produced similar yields which were higher than Norland yields. Andover was the latest maturing of the three clones tested.

Observation Trial:

Data from a non-replicated trial on yield, appearance, specific gravity and internal defects of early selection clones and recently released varieties are presented in Table 12.

Storage Results:

After-cooking darkening and blackspot ratings for clones grown in 1993 are given in Table 14.

Acknowledgments:

Seed was provided by R.L. Plaisted, Cornell University; K.G. Haynes, USDA; G.A. Porter, University of Maine; Childstock Farm, Malone, N.Y. The assistance of Bennett Orlowski, Rod Zeltmann, Mark Sisson, Sandi Mulvaney and Carole Brush is greatly appreciated.

Long Island Table 1. Tuber characteristics of potato clones grown on Long Island, N.Y.-1995.

CLONE	Table	Color	Texture	Shape	Depth	Eye Depth		Appearance	Comments
						Lateral	Apical		
Andover(NYE55-44)	2,3	Bu	SN	R-O	MT	MS	MS	7	
Atlantic	4,5	Bu	N	R	R	MS	MD	7	
BelRus	10,11	B	HR	L	F	S	S	6	Allig. skin
Cherry Red	8,9	MR	SN	R-O	MT	MS	MS-MD	6	Irr
Chieftain	8,9	Pi	S-RS	O-R	MT	MS	MS	6	St, light color
Coastal Russet	10,11	B	MR	L	SF-MT	S	S	7	
Goldrush	10,11	B	MR	L	SF	S	S	6	Sl Irr
Katahdin	4,5 6,7	W	S	R-O	SF	S-MS	MD	7	Sl Irr, Sc
Norland Dk Rd	8,9	Pi	RS	O-R	MT	MS	MS	6	SS, Sp, L
Norwis	6,7	W	S	O	F	MS	MD	6	Irr
Red Ruby	8,9	MR	RS	O-R	MT-R	MS	MS-MD	6	Irr, Sm
Snowden	4,5	Bu	N	R	R	MD	MD	6	Irr
St. Johns	4,5	W	S-RS	R-O	SF-MT	MS	MS-MD	7	Sl Irr
Superior	2,3,6,7	Bu	SN	R-O	SF	MD	MD	6	Irr
AF875-15	2,3	Bu	RS	R-O	MT	MS	MD	6	Irr
AF1331-2	2,3,6,7	W	RS	O-R	SF	S-MS	MS	7	Sl Irr, L
AF1379-3	2,3	W	S	O-L	MT	S	MS	8	
AF1426-1	2,3	BW-W	RS	R-O	MT	MS	MS	6	Irr, Sk
AF1438-5	4,5	Bu	N	R	R	MS	MS	8	Sm
AF1438-6	2,3	Bu	SN	R-O	MT	S-MS	MS	7	Sl Irr
AF1470-17	6,7	W	RS	O-R	MT	S	S	6	Pi buds
AF1475-16	6,7	W	S	O	SF	S	MS	7	Sp, Sl Irr
AF1481-4 (Maine)	10,11	B	HR	L	MT-SF	S	S	6	GC
AF1481-4 (NE107)	10,11	B	HR	L	MT-SF	S	S	7	GC, sl Irr
AF1606-2	6,7	W	RS	O	SF-MT	S-MS	MS	6	Sp, Irr
AF1656-4	6,7	W	S-RS	O	MT	S	S-MS	6	Sl Irr, Rhiz
AF1657-3	6,7	Bu	SN	O	SF	S	S-MS	6	Irr
AF1675-1	6,7	Bu	RS	O-R	MT	MD	MS-MD	6	Some Irr
B0178-34	6,7	W	RS	O-R	SF-MT	S-MS	MS	6	Irr, Sp
B0493-8	10,11	B	HR	L	MT-SF	S	S	6	Sl Irr
B0564-8	6,7	Bu	SN-N	R	R	S	MS	6	Some Irr and SS
B0564-9	4,5	Bu	SN-N	R	R	S-MS	MS	7	
B0684-5	6,7	W	S	O	R-SF	S	S-MD	6	Sp, Sc
B0811-13	8,9	DR	N	R	R	MD	MD	6	Irr, Y Fl
B0835-11	10,11	B	H-MR	L	MT-SF	S	S	7	OK
B0903-2	8,9	Pu	RS	O-R	SF	MS	MS	6	SS
B0984-1	8,9	DR	S-RS	R	R	MS	MD	6	Irr
B1016-3	6,7	Bu	SN-N	O	MT	MD-D	MD	4	Rough
B9922-11 (NE107)	10,11	B	HR	O-L	SF	S	S	7	Sl Irr
B9922-11 (USDA)	10,11	B	HR	O-L	SF	S	S	7	Sl Irr
ND1871-3R	8,9	MR-DR	RS	R	R-MT	MS	MS-MD	5	Irr, Sm, Sp
ND2417-6	4,5	W	RS	R-O	SF	MS	MS	6	Kn on stem
ND2471-8	4,5	W	RS	R	MT	MS	MS-MD	7	Some Sc
NY87	2,3,4,5,6,7	Bu-W	SN-RS	O-R	MT	MS	MD	7	Redish skin
NY103	6,7	W	S	O	SF-MT	S	S	8	OK
NYM14-6	6,7	Bu	SN-N	R	R	S	S-MS	7	DSE
NYM19-3	6,7	W	S-RS	O	SF-MT	S	S-MS	8	Sl Irr
NYM19-4	6,7	Bu	SN	R-O	MT	S	MD-MS	7	
NYM28-3	6,7	W	S	O-R	SF	S	MD	7	Some Irr

COLOR: B=brown, Bu=buff, Pi=pink, Pu=purple, R=red, T=tan, W=white. Modifiers: L=light, M=medium, D=dark.

TEXTURE: N=netted, R=russet, S=smooth. Modifiers: H=heavy, M=moderate, R=Relatively, S=Slightly.

SHAPE: L=long, O=oblong, R=round. EYE DEPTH: D=deep, M=moderate, S=shallow. TUBER DEPTH: MT=medium

thick, R=round, F=flattened, SF=slightly flattened. COMMENTS: L=prominent lenticels, Irr=irregular, Kn=knobs,

Sc=scab, Sk=skinned, Sl=slightly, Sm=small, Sp=sprouts, St=stolons, SS=Silver scurf, F=flesh, Y=Yellow, W=white.

Long Island Table 2. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity for early white-skinned clones grown at Riverhead, N.Y. - 1995.

white-skinned clones grown at Riverhead, N.Y. - 1995.														
Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)						Size Distribution				Specific ¹ Gravity
		cwt/A	percentage of standard	< 2"	2 to 2.5"	2.5 to 3.25"	3.25" to 4"	> 4"	2 to 4 in.		4 in.	2.5 to 4 in.		
Season-124 days														
Superior	444	414	100	7	26	57	10	0		93	68	74		
Andover(NYE55-44)	459	430	104	6	35	53	6	0		94	59	79		
AF1331-2	455	399	96	12	13	58	17	0		88	75	71		
AF1379-3	398	336	81	15	51	32	2	0		85	33	74		
AF1426-1	364	296	72	16	8	33	40	2		81	73	66		
AF1438-6	428	384	93	9	18	55	17	1		90	72	66		
AF875-15	446	421	102	6	21	61	13	0		94	73	76		
NY87	445	417	101	6	24	55	15	0		94	70	71		
Waller-Duncan														
														(4)
LSD (0.05)														
														(4)

Planted on 4/6/95, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 8/8/95, harvested on 8/29/95.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 3. Maturity, tuber shape, and internal and external defects of early white-skinned clones grown at Riverhead, N.Y. - 1995.

Clone	Maturity ¹ on 8/1/95	Tuber Data ¹		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow heart	Brown center	Internal Necrosis		
											Sl.	Mod. Sev.	
Season-124 days													
Superior	3	R-O	6	1	0	1	0	0	0	0	0	0	0
Andover(NYE55-44)	4	R-O	7	1	0	0	0	0	0	5	0	0	0
AF1331-2	4	O	7	8	4	2	2	1	3	0	3	0	0
AF1379-3	4	O-L	8	5	2	2	0	1	3	0	3	0	0
AF1426-1	4	R-O	6	14	7	6	1	1	3	0	3	0	0
AF1438-6	3	R-O	7	5	1	2	1	1	0	0	0	0	0
AF875-15	4	R-O	6	2	1	0	0	1	8	0	0	0	0
NY87	5	R-O	7	3	1	0	0	2	0	5	0	0	0

¹ -See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade. Mechanical defects, however, were not scored.

Long Island Table 4. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity for NE107 white-skinned clones grown at Riverhead, N.Y. - 1995.

white-skinned clones grown at Riverhead, N. Y. - 1993.														
Clone	Total		Marketable Yield		Size Distribution (%)						Size Distribution			Specific ¹ Gravity
	Yield cwt/A	cwt/A	percentage of standard	< 2"	2 to 2.5"			4"	> 4"	2 to 4 in.	4 in.	2.5 to 4 in.		
					2 to	2.5"	3.25"							
Season-139 days														
Katahdin	405	318	100	21	22	43	13	0		79	56	60		
Atlantic	518	484	152	7	23	55	16	0		93	70	81		
Snowden	497	462	145	7	36	52	5	0		93	57	76		
St. Johns	503	451	142	10	18	50	22	1		90	72	65		
AF1438-5	433	382	120	12	45	40	3	0		88	44	60		
B0564-9	449	418	132	7	28	52	13	0		93	65	73		
ND2417-6	422	361	113	15	36	45	5	0		85	50	71		
ND2471-8	410	340	107	17	36	40	6	0		83	47	75		
NY87	436	402	126	8	24	51	17	0		92	68	68		
Waller-Duncan														
LSD (0.05)	(57)	(52)										(3)		

Planted on 4/6/95, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 8/23/95, harvested on 9/5/95.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 5. Maturity, tuber shape, and internal and external defects of NE107 white-skinned varieties and clones grown at Riverhead, N.Y. - 1995.

Clone	Maturity ¹ on 8/1/95	Tuber Data ¹		Tuber Defects (%)					Percentage					
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow heart	Brown center	Internal Necrosis			
											Sl.	Mod. Sev.		
Season-139 days														
Katahdin	5	R-O	7	15	5	0	0	10	(Sc)	0	13	0	3	0
Atlantic	5	R	7	3	1	1	0	1		0	23	33	15	0
Snowden	7	R	6	1	0	0	0	1		0	3	0	3	0
St. Johns	6	R-O	7	6	3	1	0	2		8	13	5	0	0
AF1438-5	5	R	8	0	0	0	0	0		0	0	0	0	5
B0564-9	3	R	7	1	1	0	0	0		8	0	0	0	0
ND2417-6	4	R-O	6	5	1	3	0	1		0	0	3	0	0
ND2471-8	4	R	7	8	1	0	0	6	(Sc)	13	3	0	0	0
NY87	4	O-R	7	3	2	0	0	0		3	18	0	0	0

¹ -See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 6. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity for white-skinned clones from Northeastern Potato Breeding Programs grown at Riverhead, N.Y. - 1995.

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)						Size Distribution				Specific ¹ Gravity
		cwt/A	percentage of standard	< 2"	2 to 4"				2 to 4 in.	2.5 to 4 in.	2.5 to 4 in.	Specific ¹ Gravity		
					2 to	2.5"	3.25"	4"					> 4"	
Season-138 days														
Katahdin	401	326	100	19	23	42	16	0	0	81	58	59		
Superior	346	317	97	8	33	56	3	0	0	92	59	73		
Norwis	489	414	127	6	7	38	40	9	0	85	78	62		
AF1331-2	440	393	121	11	21	60	9	0	0	89	69	72		
AF1470-17	498	401	123	20	30	46	4	0	0	80	50	62		
AF1475-16	413	373	114	9	14	54	22	1	0	90	76	66		
AF1606-2	394	357	110	9	22	59	10	0	0	91	69	67		
AF1656-4	446	373	115	15	9	48	27	1	0	84	75	67		
AF1657-3	435	355	109	18	22	50	9	0	0	82	59	70		
AF1675-1	354	275	84	22	27	49	2	0	0	78	50	67		
B0178-34	515	441	135	14	16	51	18	0	0	86	69	78		
B0564-8	431	391	120	9	31	56	4	0	0	91	60	74		
B0684-5	405	313	96	22	14	51	12	0	0	77	63	66		
B1016-3	480	412	127	14	21	52	12	0	0	86	65	74		
NY87	453	430	132	5	21	61	13	0	0	95	74	68		
NY103	419	369	113	12	22	56	10	0	0	88	66	69		
NYM14-6	478	443	136	6	11	48	33	1	0	93	81	68		
NYM19-3	505	471	145	7	24	57	13	0	0	93	70	63		
NYM19-4	401	367	113	8	29	57	5	0	0	92	63	70		
NYM28-3	442	411	126	7	23	61	9	0	0	93	70	74		
Waller-Duncan														
LSD (0.05)		(37)	(43)	(3)										

Planted on 4/7/95, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 8/23/95, harvested on 9/19/95.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 7. Maturity, tuber shape, and internal and external defects of white-skinned varieties from Northeastern Potato Breeding Programs grown at Riverhead, N.Y. - 1995.

Clone	Maturity on 8/1/95	Tuber Data ¹		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow heart	Brown center	Internal Necrosis Sl. Mod. Sev.		
Season-138 days													
Katahdin	5	R-O	6	10	4	1	0	6	(ST,Sc)	3	3	5	0
Superior	2	O-R	5	2	0	2	0	0		0	0	0	0
Norwis	6	O	6	3	1	0	0	2		5	13	23	3
AF1331-2	3	O-R	6	6	2	2	1	1		0	0	3	0
AF1470-17	4	O-R	6	9	1	2	0	6	(Sc)	3	40	0	0
AF1475-16	4	O	7	5	3	0	0	3		0	3	0	0
AF1606-2	1	O	6	4	1	3	0	1		10	0	3	0
AF1656-4	5	O	6	13	1	3	7	2		5	5	5	0
AF1657-3	3	O	6	12	0	4	1	7		0	13	0	3
AF1675-1	4	O-R	6	13	2	1	1	9		3	5	0	0
B0178-34	6	O-R	6	10	2	1	1	7		0	28	0	5
B0564-8	3	R	6	1	0	0	0	1		0	0	0	0
B0684-5	4	O	6	18	0	0	0	17	(Sc)	0	0	0	0
B1016-3	7	O	4	7	2	4	0	1		15	18	0	0
NY87	4	O-R	7	1	1	0	0	0		0	0	0	0
NY103	5	O	8	6	2	4	0	1		0	5	0	0
NYM14-6	5	R	7	3	1	0	0	2		0	8	3	0
NYM19-3	4	O	8	2	2	0	0	0		0	3	10	0
NYM19-4	3	R-O	7	2	2	0	0	0		0	0	0	0
NYM28-3	6	O-R	7	3	0	1	0	1		0	3	0	0

¹ -See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 8. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity for red-skinned clones grown at Riverhead, N.Y. - 1995.

clones grown at Rivernead, N. I. - 1993.												
Clone	Total		Marketable Yield		Size Distribution (%)					Size Distribution		Specific ¹ Gravity
	Yield cwt/A		cwt/A	percentage of standard	< 2"	2 to 2.5"	2.5 to 3.25"	3.25 to 4"	> 4"	2 to 4 in.	2.5 to 4 in.	
Season-138 days												
Chieftain	412		363	100	11	33	44	11	0	88	55	64
Cherry Red	430		364	100	15	28	47	10	0	85	56	70
Norland Dk Rd	336		290	80	14	43	40	4	0	86	44	59
Red Ruby	364		294	81	19	55	25	0	0	81	25	62
B0811-13	372		332	92	10	33	46	10	0	89	56	69
B0984-1	400		357	98	10	17	47	25	0	89	72	71
ND1871-3R	413		329	91	20	44	34	1	0	80	36	61
B0903-2	536		466	128	13	29	50	8	0	87	58	71
Waller-Duncan												
LSD (0.05)	(75)		(71)									(3)

Planted on 4/7/95, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 8/23/95, harvested on 9/19/95.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 9. Maturity, tuber shape, and internal and external defects of red-skinned varieties grown at Riverhead, N.Y. - 1995.

Clone	Maturity ¹ on 8/1/95	Tuber Data ¹		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun-		Growth		Hollow heart	Brown center	Internal Necrosis		
					burn	shapen	cracks	Other ²			Sl.	Mod.	Sev.
Season-138 days													
Chieftain	5	O-R	6	3	1	1	0	1	0	23	15	8	3
Cherry Red	5	R-O	6	8	2	1	2	4	15	13	5	0	0
Norland Dk Rd	1	O-R	6	2	0	1	0	0	0	3	3	0	0
Red Ruby	4	O-R	6	5	1	3	0	0	0	0	3	0	0
B0811-13	3	R	6	2	0	2	0	0	0	10	0	0	0
B0984-1	6	R	6	6	0	2	0	3	0	8	8	0	0
ND1871-3R	5	R	5	2	2	0	0	0	0	3	0	0	0
B0903-2	4	O-R	6	8	2	1	1	4	0	0	0	0	0

¹ -See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade. Mechanical defects, however, were not scored.

Long Island Table 10. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity for russet-skinned clones grown at Riverhead, N.Y. - 1995.

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Size Distribution				Specific ¹ Gravity
		cwt/A	percentage of standard	<4	4 to 8	8 to 12	12 to 16	> 16 oz.	4 to 16 oz.	8 to 16 oz.			
Season-138 days													
Coastal Russet	377	297	100	21	46	29	3	1	79	32	64		
BelRus	311	199	67	36	41	19	3	0	64	23	74		
Goldrush	376	265	89	27	37	25	9	3	70	34	66		
AF1481-4 (Maine)	395	242	81	38	40	17	3	1	61	21	69		
AF1481-4 (NE107)	375	253	85	31	41	22	4	1	68	27	71		
B0493-8	468	316	106	27	33	26	9	6	68	34	69		
B0835-11	383	278	93	25	40	24	9	3	72	33	67		
B9922-11 (USDA)	379	293	99	20	47	24	5	3	77	30	79		
B9922-11 (NE107)	403	304	103	23	45	21	9	1	76	30	77		
Waller-Duncan													
LSD (0.05)	(47)	(55)										(3)	

Planted on 4/7/95, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 8/23/95, harvested on 9/19/95.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 11. Maturity, tuber shape, and internal and external defects of russet-skinned varieties grown at Riverhead, N.Y. - 1995.

Clone	Maturity ¹ on 8/1/95	Tuber Data ¹		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow heart	Brown center	Internal Necrosis		
											Sl.	Mod. Sev.	
Season-138 days													
Coastal Russet	4	L	7	4	1	0	1	2	0	0	5	5	0
BelRus	4	L	6	2	0	0	0	1	8	10	3	0	0
Goldrush	5	L	6	5	1	4	0	0	0	0	0	0	0
AF1481-4 (Maine)	6	L	6	21	0	0	16	5 (Sc)	0	5	0	0	0
AF1481-4 (NE107)	5	L	7	12	0	0	9	3	0	3	0	0	0
B0493-8	4	L	6	13	2	5	0	6 (Sc)	3	13	0	0	0
B0835-11	5	L	7	7	1	5	0	1	0	0	0	0	0
B9922-11 (USDA)	6	O-L	7	2	0	1	1	0	5	0	3	0	0
B9922-11 (NE107)	5	O-L	7	4	1	3	0	0	8	0	3	0	0

¹ -See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 12. Yield and quality of early selection lines and recently named varieties in a non-replicated observation trial. 1995

Clone	% of										% Internal Defects										Eye Depth		Appear- ance	Comments ²		
	Yield (cwt/A)					Defects					Spec.					Internal Necrosis										
	Total	2-4	standard	2 to 4	%	Grav.	HH	BC	Sl.	M	S	Color	Texture	Shape	Depth	Lateral	Apical									
	Season-139 days																									
White-skinned lines																										
Katahdin	455	332	100	16	60	0	33	10	10	0	0	W	RS-S	R-O	SF	S	MD	6	Irr, St, Sc							
Superior	518	457	137	5	70	10	0	0	0	0	0	Bu	SN	R-O	SF	MD	D	6	Sl Irr							
AF1291-43	410	324	97	12	60	0	70	10	20	0	0	W	RS	O	MT	S	S	7	Sl irr							
AF1426-1	566	438	132	19	71	0	0	0	0	0	0	W	RS	O	MT	MS	MS	5	Irr, Kn							
AF1538-2	549	481	145	8	69	0	10	20	0	0	0	Bu	N	O	SF	S	MS	8	OK							
AF1713-1	465	322	97	24	77	0	0	0	0	0	0	Bu	N	O	MT	S	S	6	Sc							
AF1714-2	428	331	100	12	73	10	0	0	0	0	0	W	RS	R	MT	MS	MS	5								
B0766-3	592	514	155	5	71	10	0	0	0	0	0	Bu	SN	R-O	R	MS	MS	7	Sl Irr							
B0856-4	625	559	168	4	61	0	0	0	0	0	0	W	RS	R	SF	MS	MD	5	Irr, Sc							
B0887-5	379	330	99	8	72	0	0	0	0	0	0	W	S	R-O	R	MS	MS	5	Irr							
B1017-7	446	424	128	2	78	0	0	10	10	0	0	W	RS	R-O	MT	MS	MS	7	OK							
B1032-3	457	352	106	2	76	0	10	10	0	0	0	W	S	R	MT	MS	MS	7	Bruised							
B1083-51	571	528	159	2	72	0	0	0	0	0	0	W	RS	R-O	SF	MS	MS	7	Ok							
B1093-21	501	367	110	21	74	0	0	0	0	0	0	W	RS	O	MT	S	S	7	Sc							
B1094-80	458	393	118	7	68	0	10	10	0	0	0	Bu	RS	O-R	MT	S	S	8								
B1250-3	646	532	160	13	77	10	0	40	20	20	0	Bu	SN	R-O	MT	S	MS	6	Sc, Irr							
B1303-14	711	574	173	10	64	0	0	0	0	0	0	W	S	O-R	MT-R	MS	MS	6	Large, Irr							
N15-8	551	486	146	4	75	0	10	0	0	0	0	W	RS	R-O	R	MS	MS	6	Bl, Sc							
N15-18	417	338	102	8	83	0	0	0	0	0	0	W	RS	R-O	MT	MS	MS	7	L, W Fl							
P1-101	481	410	123	3	73	0	20	10	10	10	0	W	RS	R-O	F	MS	MD	6	Sc							
P7-19	622	581	175	3	76	0	0	20	30	0	0	Bu	N	R-O	MT	MS	MS	6	Sc, Irr							
P13-110	472	442	133	2	66	0	0	0	0	0	0	Bu	RS	R	MT	MS	MS	6	Sl Irr							
P23-17	417	386	116	3	70	0	0	0	0	0	0	Bu	SN	R-O	MT	MS	MS	7	Sl Irr							
P23-31	444	360	108	9	68	0	0	0	0	0	0	W	S	R	MT	S	MS	8								
P29-2	531	465	140	5	69	0	0	0	0	0	0	W	RS	R	F	MD	MD	5	Irr							
SC9010-5	515	448	135	10	63	20	0	0	0	0	0	W	RS	O	MT	S	S	6	Nice							
White-skinned lines with poor yield and/or appearance																										
AF1290-11		B1080-20			B1089-42		B1099-5		B1166-6		N50-3															
B0763-15		B1083-20			B1094-47		B1110-10		B1255-13 (1)		P18-8															
B1074-25		B1088-37			B1098-29		B1110-11		N15-3		P29-1															

Long Island Table 13. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity and total defects of Andover, Norland and Superior at four nitrogen rates at Riverhead, N.Y. - 1995.

N Rate lbs/A	Total Yield cw/A	Marketable Yield		Size Distribution (%)				Size Distribution		% Total Tuber Defects	Specific ¹ Gravity	Maturity ² on 7/31/95
		cwt/A	percentage of standard	< 2"	2 to 2.5"	2.5 to 3.25"	3.25 to 4"	2 to 4 in.	4 in. > 4"			
Season-150 days												
Andover												
100	431	412	94	3	2	21	70	5	93	91	3	76
150	458	436	100	3	2	16	70	8	89	87	3	76
200	438	414	95	4	2	18	67	10	86	84	4	77
250	432	411	94	2	2	20	67	9	89	87	2	79
Norland												
100	377	340	99	4	6	29	59	2	94	88	4	62
150	386	345	100	6	5	27	63	0	94	89	6 (GC)	63
200	384	339	98	7	5	27	59	3	91	86	7 (GC)	61
250	397	348	101	8	5	22	62	4	88	84	8 (GC)	59
Superior												
100	453	420	99	3	4	24	66	3	94	90	3	73
150	463	426	100	4	4	24	59	8	88	84	3	71
200	461	423	99	4	4	18	61	13	83	79	4	68
250	450	419	98	3	4	17	66	10	87	84	3	70

Significance level:

Variety (0.001) (0.001)
Fertilizer rate (NS) (NS)
Variety x Fert. (NS) (NS)

(0.001)
(NS)
(NS)

Planted on 4/11, all plots received 200 lbs/A of P₂O₅ and K₂O and 50 lbs/A of MgO, vine killed on 9/8, harvested on 9/11/95.

¹ -1.0 is excluded from specific gravity readings.

² -See rating system outlined in the text.

Long Island Table 14. After-cooking darkening and blackspot ratings of clones grown in 1994.

NE107 White				White			Red			Russet		
1994 Tables 4-5				1994 Tables 6-7			1994 Tables 8-9			1994 Tables 10-11		
Clone	ACD	BS		Clone	ACD	BS	Clone	ACD	BS	Clone	ACD	BS
Katahdin	4.4	5.9		Katahdin	4.8	6.0	Chieftain	5.0	6.0	Coastal Russet	4.9	6.0
Allegany	4.8	6.0		Allegany	4.7	6.0	Norland ¹	4.5	6.0	BelRus	3.9	6.0
Atlantic	4.3	6.0		Norwis	4.9	6.0	B0811-13 ³	4.9	6.0	Goldrush	4.4	6.0
Castile	4.9	5.9		AF1475-16	3.7	5.9	B0903-2	4.5	6.0	B0169-56	4.7	5.9
Chipeta	4.3	5.9		AF1606-2	3.8	6.0	NDO2438-7	3.3	6.0	B0493-8	4.8	6.0
Kennebec	4.8	6.0		AF1609-1	3.5	6.0	NDO2469-1R	4.5	6.0	B9922-11	5.0	5.9
Snowden	4.8	6.0		AF1612-8	5.0	6.0	NDO2686-6R	3.6	5.9			
St. Johns	4.7	6.0		B0587-9	3.9	5.7	NY97 ¹	4.9	6.0			
AF1470-17	4.9	6.0		B1022-8	3.1	5.9	NYM252-1 ³	4.7	5.9			
B0564-8	4.6	6.0		L18-9	4.7	6.0	NYN40-2 ²	4.7	6.0			
B0564-9	4.9	5.9		L8-18	4.4	6.0						
ND2417-6	3.9	5.9		L8-4	4.9	5.9						
ND2471-8	3.4	6.0		NY101	4.8	6.0						
NY84	4.5	5.9		NY103	4.7	6.0						
NY87	4.3	6.0		NY87	4.5	6.0						
NYE11-45	4.3	6.0		NY99	4.6	6.0						
				NYE11-45	4.9	6.0						
<i>Waller Duncan</i>												
LSD (0.05)	(0.5)	ns		(0.4)	ns		(0.6)	ns		(0.6)	(0.1)	

After-cooking darkening (ACD) rating based on a scale of 1 to 5; 1 = severe darkening, 5 = no after-cooking darkening. Five tubers rated per replication, four replications in each experiment.

¹ - Replicated three times. ² - Replicated once, data not included in statistical analysis. ³ - Replicated 4 times for ACD and 3 times for BS ratings. Blackspot (BS) determinations are based on approximately ten tubers per replication. Tubers were stored at 40° F and bruised between 1/30/95 and 2/7/95. Bruised areas were peeled and evaluated two days after impact. Each tuber received a blow in each of two locations about 1 to 2 cm from the stem end. The bruising was done by dropping a 175 gram weight a distance of 30 cm. The point of impact was marked by inking the base of the weight. Ratings are based on a scale of 1 to 6 with 1 = severe discoloration and 6 = no discoloration.

North Carolina

W. W. Collins and R. Schiavone

Introduction

Potato variety trials were planted at three grower locations and one experiment station in Eastern North Carolina. Trials included round white, russet, red and the NE-107 regional tests. Both cultivars and experimental selections were grown in these tests and originated from a number of breeding programs. In addition, a trial was conducted at the Upper Mountain Research Station in Western North Carolina with red, white and russet clones.

Eastern tests were planted in March and harvested in June with growing days between 96 and 105 days depending on location and crop status. The western trial was planted in May and harvested in September with 113 growing days. A randomized complete block design with four replications was used. Each plot contained 28 hills with an in row spacing of 9 inches except the russet test which had a 12 inch spacing. The between row spacing was 38 inches for the eastern trials and 54 inches for the western trial. Fertilization, pest and weed control practices were in compliance with local recommendations. The growing season could be described as good with cooler and wetter than normal conditions. Results are presented in Tables 1-10.

Results

Atlantic, Snowden, AF875-15, and W870 had good chip color, high specific gravity and high marketable yield. Andover scored the best chip color, had good specific gravity and very nice appearance but variable yields. FL1857, FL1867, FL1872 and B0174-16 had good specific gravity and chip color with moderate yields. A russet (B9922-11) provided the highest specific gravity reading of 1.085.

Good yielding chippers with moderate specific gravity and good appearance were AF1569-2, AF1569-3, AF1565-12, B0257-12, B0564-8, B0564-9, B0763-15, B0687-14 and Chipeta.

Mainestay is an early maturing tablestock potato and was the highest yielding clone, averaging 125% of the standard Atlantic. Medium maturing table stock clones with good yields were NY87 and Rocket. Late maturing tablestock clones with good yields were NY84, B0856-4, AF1470-17, Carlingford and St. Johns.

Goldrush, Krantz and B9922-11 were the highest yielding russets with good tuber appearance.

Fontenot, Red LaSoda and Dark Red Norland were the best yielding red clones with good tuber appearance.

In the Western trial several clones out-performed the standard Kennebec. The red clones Fontenot, ND2224-5R and Red LaSoda had yields equal to or higher than the standard. Snowden, AF875-15 and Andover had higher yield and specific gravity as well as better chip color than Kennebec. Clones with better tuber appearance than the standard were Fontenot, NY84, ND2224-5R, AF875-15 and Andover. NY84 out-performed the standard in all areas except specific gravity.

NORTH CAROLINA Table 1. Potato Variety Trial, Bright Farm, Pasquotank Co. Planted 3-15-95 Harvested 6-22-95 (99 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
MAINESTAY	404	393	122	9	1.059	6	0	0	3
AF1569-2	397	392	122	9	1.061	2	0	0	2
AF1569-3	360	350	108	9	1.062	4	0	0	2
RED LASODA	333	329	102	7	1.051	7	7	0	5
MORENE	344	328	102	8	1.059	7	0	0	9
ST. JOHNS	328	325	101	9	1.058	5	0	0	5
AF875-15	342	323	100	9	1.071	3	0	0	4
ATLANTIC(Std)	342	323	100	9	1.071	4	3	0	7
DARK RED NORLAND	322	310	96	9	1.058	6	0	0	1
AF1675-1	339	310	96	8	1.063	5	0	0	6
NY84	313	308	96	8	1.052	6	0	0	6
FONTENOT	327	306	95	7	1.061	6	0	0	3
B1027-6	310	304	94	9	1.074	5	1	0	3
AF1433-4	297	294	91	8	1.061	3	0	0	2
AF1612-8	294	292	91	9	1.061	6	0	0	7
SNOWDEN	286	281	87	8	1.070	3	0	0	8
ANDOVER	296	277	86	8	1.068	2	0	0	2
SUPERIOR	287	275	85	9	1.063	6	4	0	1
AF1668-60	237	235	73	9	1.063	2	0	2	2
AF1714-2	284	231	71	7	1.069	4	0	0	4
AF1668-62	231	228	71	8	1.062	3	0	0	4
NC259-4	190	188	58	6	1.064	6	0	2	8
NC246-2	140	137	43	7	1.076	5	0	0	9
AF1668-13	112	106	33	7	1.055	4	0	0	9
Waller-Duncan									
LSD (k=100)	42	41							
Mean	296	286							

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.
2-Chip color supplied by Wise Food 6-26-95. 1= very light, 5= acceptable, 9= very dark.
3- Number of tubers out of 40 (10/rep) with internal disorder.
4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 2. Potato Variety Trial, Cooper Farm, Tyrell Co. Planted 3-13-95 Harvested 6-20-95 (99 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
AF1470-17	531	530	151	8	1.059	7	1	0	8
B0564-9	454	450	128	8	1.072	2	0	0	7
MAINESTAY	395	395	113	8	1.064	6	0	0	6
AF1565-12	401	395	112	9	1.059	3	1	0	4
FONTENOT	389	388	110	8	1.072	4	0	0	6
B0564-8	388	388	110	9	1.075	2	0	0	7
B0257-12	375	373	106	9	1.073	3	0	0	7
AF875-15	381	370	105	8	1.080	3	0	0	7
SNOWDEN	369	368	105	8	1.077	2	0	0	7
ANDOVER	367	366	104	9	1.079	1	0	0	7
DARK RED NORLAND	367	365	104	8	1.061	6	0	0	1
B0585-5	370	357	102	8	1.075	3	0	0	7
RED LASODA	356	356	101	8	1.056	6	1	0	4
FL1857	354	353	100	7	1.081	2	2	0	6
ATLANTIC(Std)	352	351	100	8	1.081	2	1	0	7
FL1872	347	347	99	7	1.082	4	0	0	8
ST. JOHNS	346	346	99	8	1.060	5	0	0	8
NY84	349	345	98	8	1.055	5	0	0	9
B0178-34	339	334	95	8	1.083	1	2	0	8
FL1867	329	329	94	9	1.083	1	0	0	6
SUPERIOR	327	327	93	9	1.070	2	0	0	4
AF1424-7	303	303	86	8	1.075	2	0	0	6
AF1433-4	280	280	80	9	1.068	1	0	0	4
AF1452-28	253	250	71	8	1.062	2	0	0	4
Waller-Duncan									
LSD (k=100)	39	39							
Mean	364	361							

1- Tuber appearance: 1=very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 6-23-95. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 3. Potato Variety Trial, McCotter Farm, Pamlico Co. Planted 3-13-95 Harvested 6-19-95 (98 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
MAINESTAY	396	395	128	8	1.061	5	0	0	5
CARLINGFORD	347	345	111	8	1.059	7	0	0	7
RED LASODA	333	331	107	7	1.058	6	0	0	4
PENTLAND SQUIRE	334	330	107	7	1.070	6	0	26	8
AF875-15	327	324	104	8	1.073	4	0	0	6
ST. JOHNS	324	323	104	9	1.063	5	0	0	7
NY84	319	319	103	8	1.054	6	0	0	8
ROCKET	319	319	103	8	1.073	6	0	1	5
SUPERIOR	319	315	102	8	1.072	5	0	0	4
ATLANTIC(Std)	313	310	100	8	1.076	6	1	0	6
SNOWDEN	310	310	100	7	1.068	4	0	0	8
SAXON	317	307	99	8	1.057	7	1	0	6
SIERRA	308	306	99	9	1.056	7	0	0	9
NAVAN	305	302	97	8	1.068	7	0	10	9
AF1433-4	296	294	95	8	1.068	3	0	0	5
AILSA	273	272	88	7	1.064	6	0	0	7
DARK RED NORLAND	273	270	87	8	1.062	6	0	0	1
BETTINA	279	269	87	8	1.064	8	0	0	9
FONTENOT	261	259	83	7	1.072	6	0	1	5
MARIS BARD	259	242	78	9	1.065	6	6	0	4
ANDOVER	232	230	74	9	1.074	2	0	0	4
NC259-5	192	191	61	8	1.067	5	0	0	6
NC271-5	151	149	48	8	1.062	5	0	0	8
NC260-6	149	148	48	9	1.074	5	1	0	7
Waller-Duncan									
LSD (k=100)	44	45							
Mean	289	286							

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2-Chip color supplied by Wise Food 6-23-95. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 4. Early Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-17-95 Harvested 6-21-95 (96 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
AF875-15	256	244	101	9	1.083	3	1	0	5
SUPERIOR(Std)	253	242	100	8	1.070	4	2	1	4
ATLANTIC	218	207	86	8	1.078	3	4	4	6
AF1438-4	216	201	83	9	1.064	3	1	3	2
AF1424-7	198	188	78	9	1.079	2	0	0	5
AF1426-1	204	188	78	8	1.067	6	0	0	6
ND2471-8	212	182	75	8	1.081	4	0	2	5
DARK RED NORLAND	183	176	73	9	1.062	6	4	0	2
NORCHIP	203	176	73	9	1.078	3	5	0	6
AF1565-12	172	145	60	9	1.063	3	5	4	5
MONONA	164	140	58	8	1.065	3	1	2	3
AF1470-18	235	131	54	9	1.063	5	0	10	5
Waller-Duncan									
LSD (k=100)	62	52							
Mean	210	185							

1 -Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 6-26-95. 1=very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 5. Red Variety Trial at Tidewater Research Station, Plymouth, N. C. Planted 3-17-95 Harvested 6-30-95 (105 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Hollow Heart	2 Heat Necrosis	3 Vine Maturity
CHIEFTAIN	280	274	113	7	1.063	0	1	6
FONTENOT	278	261	108	7	1.072	0	0	5
RED LASODA(Std)	249	242	100	7	1.056	1	1	5
ND1871-3R	259	231	95	8	1.060	0	0	5
B0811-13	231	221	91	8	1.064	1	0	4
CHERRY RED	210	198	82	9	1.074	3	0	5
RED RUBY	211	187	77	8	1.054	0	0	6
DARK RED NORLAND	198	186	77	8	1.064	3	0	2
ND2224-5R	196	184	76	9	1.064	0	0	2
Waller-Duncan								
LSD (k=100)	53	56						
Mean	235	221						

1 -Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Number of tubers out of 40 (10/rep) with internal disorder.

3- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 6. Round White Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-17-95 Harvested 6-30-95 (105 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
B0687-14	293	273	109	8	1.072	3	1	0	6
B0856-4	278	259	103	8	1.065	5	4	0	6
ATLANTIC(Std)	262	250	100	7	1.073	3	4	6	8
B0174-16	258	243	97	8	1.084	4	0	0	7
B0763-15	241	234	94	9	1.069	2	1	0	8
B1017-7	236	225	90	8	1.067	7	4	3	5
B0766-3	236	222	89	6	1.057	3	16	2	5
B0717-1	244	222	89	7	1.071	5	2	0	5
B1032-3	234	219	88	8	1.069	3	1	1	7
B0684-5	230	219	88	8	1.063	5	2	0	5
B1110-11	229	214	85	8	1.071	5	2	0	7
B0984-3	229	210	84	9	1.062	4	1	1	3
B0892-7	213	194	78	9	1.074	4	10	0	3
SUPERIOR	205	194	77	8	1.068	6	1	0	3
B1171-2	210	188	75	9	1.060	6	0	0	7
B1029-6	201	186	74	8	1.078	4	1	0	8
B0887-5	190	167	67	7	1.075	3	0	1	3
SNOWDEN	168	158	63	8	1.073	3	1	0	6
B1004-8	167	156	62	7	1.060	5	0	0	7
Waller-Duncan									
LSD (k=100)	47	48							
Mean	228	212							

1 -Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 7-3-95. 1=very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 7. Russet Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-17-95 Harvested 6-29-95 (104 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Hollow Heart	2 Heat Necrosis	3 Vine Maturity
AF1643-17	152	140	152	7	1.046	4	0	6
GOLDRUSH	155	138	150	8	1.059	0	0	5
KRANTZ	162	137	149	8	1.061	0	0	7
AF1643-10	140	126	136	7	1.066	0	0	5
AF1706-18	137	121	131	9	1.062	0	0	4
AF1706-15	129	108	117	6	1.066	0	0	5
B9922-11	123	107	116	8	1.072	0	0	5
AF1552-5	115	101	109	8	1.066	0	2	8
BELRUS(Std)	102	92	100	8	1.069	4	2	5
RUSSET NORKOTAH	108	92	99	8	1.055	0	0	5
AF1481-4	92	81	88	7	1.063	1	0	5
AF1639-5	97	76	82	4	1.061	0	0	1
Waller-Duncan								
LSD (k=100)	40	42						
Mean	123	108						

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Number of tubers out of 40 (10/rep) with internal disorder.

3- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 8. NE107 Potato Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-17-95 Harvested 6-30-95 (105 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
MAINESTAY	345	327	133	8	1.066	6	0	0	7
CHIPETA	286	273	111	8	1.062	3	1	0	8
KENNEBEC	289	269	109	7	1.063	5	0	0	8
W870	284	268	109	9	1.080	3	0	0	6
B0564-8	277	263	107	9	1.071	3	1	0	6
B0564-9	278	260	105	9	1.067	4	3	0	6
SUPERIOR	271	248	101	8	1.068	6	0	0	6
ATLANTIC(Std)	263	246	100	7	1.073	3	10	1	7
NY87	252	237	96	9	1.070	5	2	0	4
AF1470-17	268	230	93	7	1.062	9	9	1	6
B0257-12	242	221	90	7	1.072	5	0	0	6
SNOWDEN	238	219	89	8	1.073	3	2	0	7
B0178-34	237	214	87	7	1.080	3	16	0	8
B0585-5	245	213	87	7	1.068	3	10	0	6
ST. JOHNS	225	205	83	8	1.066	5	1	0	8
AF1426-1	225	196	80	6	1.062	3	1	0	8
AF1433-4	207	190	77	8	1.067	3	3	1	5
AF1452-28	173	158	64	7	1.064	3	3	0	5
KATAHDIN	160	141	57	7	1.067	7	3	0	4
ANDOVER	151	135	55	8	1.072	2	2	0	3
Waller-Duncan									
LSD (k=100)	50	52							
Mean	246	225							

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 7-3-95. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 9. Unreplicated Potato Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-17-95 Harvested 6-30-95 (105 DAP)

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
AF1290-11	156	133	49	9	1.068		0	0	5
AF1291-43	106	91	34	8	1.068		6	0	6
AF1426-1	167	124	46	5	1.065		0	0	7
AF1438-6	190	127	47	6	1.060		0	0	2
AF1466-37	143	98	36	7	1.074		2	0	3
AF1475-16	223	208	77	7	1.071	5	0	0	4
AF1480-5	193	174	64	7	1.063	4	3	0	6
AF1556-3	167	140	52	7	1.076	2	0	0	2
AF1559-1	181	157	58	7	1.081		0	0	6
AF1568-6	50	41	15	7	1.057		6	4	4
AF1611-6	250	215	80	6	1.059	4	0	0	6
AF1612-25	211	190	71	9	1.070	5	1	0	4
AF1615-1	236	208	77	8	1.059	6	0	0	7
AF1638-2	155	119	44	3	1.064		0	3	5
AF1638-5	223	220	82	9	1.074	7	0	0	8
AF1643-18	247	215	80	7	1.067	9	0	1	5
AF1656-4	164	151	56	9	1.068	3	1	0	5
AF1657-3	293	261	97	7	1.068	4	0	0	6
AF1658-2	85	81	30	7	1.061		0	0	2
AF1658-5	212	197	73	9	1.076	5	0	0	6
AF1668-47	168	155	58	7	1.065	4	0	0	5
AF1698-4	126	86	32	4	1.057		1	0	5
AF1706-25	247	225	84	9	1.073	5	0	1	4
AF1713-1	230	191	71	8	1.069	4	0	1	2
AF1717-3	227	206	77	8	1.064	5	0	0	2
AF1718-1	192	160	59	9	1.076		0	0	4
AF1633-1	138	110	41	7	1.068		1	0	9
B0835-11	255	233	86	7	1.067	5	0	0	5
B0852-7	248	227	84	9	1.073	6	0	0	4
B0903-2	350	307	114	7	1.068	7	0	0	4
B0915-3	163	154	57	9	1.068	7	0	6	6
B0967-11	234	200	74	7	1.071	5	0	0	3

NORTH CAROLINA Table 9. Continued.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
B0972-10	218	177	66	8	1.070	9	1	2	7
B1016-3	307	281	104	7	1.070	6	0	0	8
B1046-2	166	153	57	7	1.073	3	0	4	7
B1072-9	253	220	82	6	1.070	6	0	0	4
B1074-25	214	191	71	7	1.063	8	0	0	7
B1083-33	223	202	75	7	1.080	5	1	0	2
B1083-51	247	223	83	8	1.075	3	0	0	5
B1088-37	290	236	88	7	1.065	7	0	0	4
B1089-42	226	192	71	8	1.073	6	1	0	6
B1090-19	223	193	72	8	1.080	4	0	0	6
B1092-33	297	262	97	7	1.082	6	0	0	8
B1093-21	206	176	65	7	1.073	4	0	0	3
B1094-47	154	129	48	7	1.062		0	0	7
B1098-29	257	247	92	7	1.080	5	1	0	9
B1098-32	275	260	97	8	1.075	5	2	0	8
B1106-2	221	203	75	7	1.069	2	0	1	2
B1110-10	174	152	56	7	1.077	2	0	0	3
B1110-5	192	162	60	6	1.074		1	0	1
B1111-9	312	273	101	8	1.069	4	2	0	4
B1150-5	434	401	149	8	1.051	4	0	0	6
B1158-4	162	149	55	8	1.062	3	0	0	5
B9922-11	139	136	50	7	1.085		1	0	7
W91-982B	213	184	68	7	1.083		3	0	6
AF1438-5	199	159	59	9	1.050	7	1	0	4
AF1612-20	214	185	69	7	1.072	6	0	1	2
B1338-N1	90	79	29	7	1.063		0	1	8
B1347-N3	183	178	66	7	1.075	6	0	0	4
B1354-N5	56	48	18	8	1.051		3	0	6
B1354-N14	71	63	23	7	1.054		4	0	7
B1393-N4	62	52	19	6	1.063		0	0	6
B1396-N5	69	54	20	7	1.070		0	0	5
B1396-N6	62	54	20	8	1.057		0	0	6
B1394-N3	76	72	27	7	1.071		1	0	7

NORTH CAROLINA Table 9. Continued.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
NC258-1	164	149	55	8	1.066		0	4	6
NC266-3	165	150	56	7	1.057		0	0	7
NC272-2	86	83	31	8	1.065		0	0	5
NC274-1	120	103	38	8	1.064		1	0	7
ATLANTIC(Std)	291	269	100	7	1.073	3	6	0	6
SUPERIOR	219	192	71	8	1.068	6	0	0	2
SNOWDEN	220	200	74	8	1.073	3	0	0	5
Mean	192	168							

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2-Chip color supplied by Wise Food 7-3-95. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 10 with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 10. WEST TRIAL, UPPER MT RESEARCH STATION, ASHE CO. PLANTED 5-15-95 HARVESTED 9-5-95 (113 DAP).

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	4 Vine Maturity
FONTENOT	479	446	130	8	1.075		0	1	7
NY84	445	425	124	9	1.062	4	0	0	9
ND2224-5R	404	387	113	9	1.058		0	0	4
AF875-15	394	368	108	8	1.080	4	1	1	7
SNOWDEN	389	369	108	7	1.078	3	0	0	7
ANDOVER	382	360	105	9	1.074	3	0	0	7
RED LASODA	418	344	101	7	1.066		0	0	5
KENNEBEC(Std)	436	342	100	7	1.073	6	0	0	9
GOLDRUSH	394	346	101	9	1.063		0	0	8
NORWIS	377	328	96	7	1.064	4	0	9	6
SUPERIOR	338	314	92	8	1.069	5	0	0	4
NORLAND	345	309	90	8	1.061		0	0	2
RUSSET NORKOTA	369	287	84	8	1.065		0	0	8
MEAN	398	356							

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2-Chip color supplied by Wise Food 9-8-95. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH DAKOTA POTATO VARIETY TRIALS AND BREEDING REPORT

**Gary Secor, Bryce Farnsworth, Mike Schwalbe, Jim Lorenzen, Richard Novy and Cooperators
Edna Holm, Neil Gudmestad, Joe Sowokinos, Duane Preston, Nikolay Balbyshev, Roald Lund**

Crossing and Seedling Production

A total of 494 potato crosses were made in the greenhouse during the winter and spring of 1995. During the summer in the greenhouse 79,740 seedlings were produced -- a 30% increase over 1994 levels. Future seedling production is expected to be approximately 100,000 seedlings/ year. This larger number of seedlings will increase the likelihood of identifying superior future varieties. The increased number of seedlings for evaluation was possible only through the support of the growers who funded the construction of additional screenhouses. At the Langdon Agricultural Experiment Station 61,592 seedlings were grown in the field and 1,197 were saved at harvest. Some of the seedling hills saved were for the Colorado potato beetle resistance and the Snack Food projects. The seedlings were planted on June 5, 6 and 7 and harvested on September 25, 26 and 27. Rainfall was excessive during the season, resulting in reduced yields and loss of some plots due to flooding.

Advanced Selections

A total of 1,046 second year selections from the 1994 seedling crop were planted at Grand Forks and Absaraka. The adaptation plot at Grand Forks was

Secor (professor and interim potato breeder), Plant Pathology; Farnsworth (senior research specialist); Schwalbe (research technician); Lorenzen (assistant professor-potato physiology); Novy (assistant professor and potato breeder); Lund (professor-potato breeding and development) and Balbyshev (research associate-breeding and germplasm development), Department of Plant Sciences, all at North Dakota State University. Cooperators are Sowokinos (potato biochemistry) University of MN; Holm (sensory evaluation-Food and Nutrition) NDSU; Gudmestad (seed potato pathology - Plant Pathology) NDSU; Preston (Area Extension Potato Agent) NDSU/U of MN.

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planted on May 29th and 30th from which 130 second-year selections were saved at harvest on September 28th and October 2nd and 17th. This includes material selected at Absaraka as well as Grand Forks. Of the advanced material, 260 selections were planted and 97 were saved at harvest. Third year and older selections were planted at the Casselton Agronomy Seed Farm for clean seed stock production.

Promising Selections

ND1871-3R, a high-yielding red with good type and shape was named and released as 'NorDonna'. Promising white selections are ND2417-6, ND2471-8, and ND2676-10. All three selections have ND860-2 as a parent, and have cold chipping quality, good yield and total solids. ND2470-27 has also yielded well under dryland and irrigated conditions. It also chips well and has good boiling, baking, and microwaving qualities. ND3828-15, a "fast-track" selection also yielded well in its first year of trials. It also has ND860-2 as a parent and therefore could be a cold chipping variety. ND3574-5R is a high yielding red selection that may have promise for southern states because of its short dormancy. ND 2225-1R and I 426 are additional red selections with potential as cultivars.

Cultivar and Selection Trials

Potato variety trials were planted under dryland conditions at Grand Forks (Potato Research Farm) and at three irrigated sites: the Carrington Research and Extension Center, and at farmers' fields near Oakes, ND and Dawson, ND. However, only the Oakes site had usable data which is presented in this report. Although the crop was planted May 5, crop development was slow and maturity was delayed. Spacing, fertility, planting and harvest dates can be seen in Table 1. The Grand Forks trial had 45 entries. There were 41 entries at Oakes. These trials consisted of four replications of 25 hills in a randomized block design at each site. These consisted of standard varieties, advanced NDSU and Idaho selections, and newly released varieties. Trials to determine nitrogen requirements of new cultivars/advanced selections were planted at Oakes and at the Potato Research Farm (Thompson, ND). A nitrogen rate x timing study was conducted at an irrigated site near Oakes.

Dryland Trials

The results of dryland trials can be seen in Table 2. 1995 was generally a good year for potato production in the Red River Valley, although not as favorable as in 1994. Once again, the wet weather in 1995 caused flooding of the research plots resulting in extremely low yields. The average U.S. No. 1 yield of all entries was 64 cwt/acre. Improvement of field drainage at the Potato Research Farm is in progress to control future flooding problems. 'Chieftain', the second-most productive clone in 1994 was the top yielder in 1995. It had an average U.S. No. 1 yield of 106 cwt/acre. A8337-2, the top-yielder last year with a U.S. No. 1 yield of 204 cwt/acre fell to an average of 54 cwt/acre. Other high yielders were 'Red Pontiac' (95 cwt/acre), 'Norchip' (94 cwt/acre), 'Atlantic' (92 cwt/acre), and ND3647-6 (92 cwt/acre). This was the first year that ND3647-6 was included in the primary variety trial. This entry was also one of the best cold chippers with an Agtron reading of 42.5 out of 40° storage with no reconditioning (Table 6).

Total solids were lower in 1995 than in 1994, averaging 19.6% at Grand Forks. Looking at overall averages, three entries had specific gravities greater than 1.090, those being 'Atlantic' (1.099), ND2471-8 (1.095), and 'Snowden' (1.093). 'Norchip' had a substantially lower specific gravity (1.081) than in the previous year at Park River (1.097) (Table 2).

In this year's report, a **general rating score** has been included for each variety or selection. This scoring takes into account overall yield as well as tuber characteristics. A score of:

- 1 = poor selection with no outstanding attributes
- 2 = poor selection with some unique quality--generally kept as a parent for crossing
- 3 = Average selection
- 4 = Above-average selection
- 5 = Superior selection

These classifications are a general guideline. As shown in the tables, entries in the variety trials scored between 3 and 5.

Additional Idaho Selection Trial

Entries in this trial are promising advanced selections from the Idaho breeding program that have the potential to be new cultivars in North Dakota. In the trial they are compared to North Dakota standard varieties. The results are shown in Table 3. While most advanced lines did not perform any better than North Dakota standard varieties, an exception was seen with A79180-

10. This entry, with somewhat lower yields than the standard varieties, had a substantially higher percentage of U.S. No. 1 tubers. It also had the best color rating for french fries, and scored well for texture and flavor (Table 7).

European Trial

European varieties and advanced selections from four companies were evaluated under North Dakota conditions with the results summarized in Table 4. Specific gravities/total solids are the average of two replications. Advanced selection SV88109 had outstanding yield in 1995 with an average U.S. No. 1 yield of 139.5 cwt/acre. If it had been included in the primary varietal trial it would have been the highest yielding entry, surpassing 'Chieftain' at 106 cwt/acre. 'Sante' and 'Morene' were additional entries with high U.S. No. 1 yields (108.0 and 96.0 cwt/acre, respectively). All three entries scored as well if not better than 'Norchip' in the general ratings (3.5 - 3.8). The specific gravities of 'Sante' (1.089) and 'Morene' (1.090) were also higher than 'Norchip' (1.086).

Processing Trials

Chipping: In the winter and spring of 1995, chipping tests were conducted on cultivars and selections grown in the 1994 trials. The samples were chipped directly from 40°F storage and then after reconditioning at 65°F for two and four weeks. Agtron readings and percent chip yield were recorded. The results are shown in Tables 5 and 6. The best cold chippers with Agtron readings above 40 (the minimum acceptable color score) were N8-14, NDA2031-2, ND860-2, ND2470-27, ND2676-10, and ND3647-6. The best five chippers after reconditioning for two weeks were 'Snowden', N8-14, ND2676-10, ND3914-4, and ND3647-6. The best five chippers after reconditioning for four weeks were 'Snowden', N8-14, ND2676-4, ND3636-1, and ND3647-6. Percent chip yield was highest for 'Atlantic' with 'Ranger' at a close second.

French Fries: Samples were tested for french fry quality by the Food and Nutrition Department. Tests were done for color, flavor and texture. The wet season, with the loss of the trial at Grand Forks reduced the number of entries in this evaluation. The results are summarized in Table 7. 'NorKing Russet' was the only entry to be rated "Good" (i.e. >7.0 rating) in almost every category--it scored 6.9 for "Flavor". Idaho selections A79180-10 and A080432-1 also performed well across the three evaluation categories. The lower yields of A080432-1 over the years potentially limits its use as a variety. This entry was originally selected in WA state for drought resistance, which might explain its poor

yields over the last several wet growing seasons. It might yield well under drier growing conditions. A79180-10 has yields of US No. 1 tubers comparable to 'Ranger' and 'Russet Norkotah' (Table 3).

Baking, Boiling and Microwaving:

Sensory evaluation of 57 entries from the 1994 Park River Trial were evaluated for boiling, baking and microwaving qualities. A summary of the results are given below:

Boiling: Characteristics examined were color immediately and four hours after cooking, mealiness, and flavor. Superior entries were AO81775-3, 'Red Pontiac', AND8673-1Russ, A82622-52, and 'Shepody'.

Baking: Mealiness, color, and flavor were evaluated. Superior entries were 'Russet Burbank', 'Shepody', AO81775-3, AO8478-1, ND01496-1, ND2417-6, ND2470-27, ND2676-10, 'Niska', and 'NorKing Russet'.

Microwaving: Mealiness, color, and flavor were evaluated. Superior entries were 'NorKing Russet', 'Ranger', 'Shepody', N8-14, AND8673-1Russ, and A82119-3.

'Shepody', AO81775-3, ND2470-27, A82622-52, and AND8673-1Russ were five entries that had good to superior performance ratings across all three of the above categories.

Irrigated Trials

The highest yielding red selections were 'Red LaSoda', 'Fontenot', ND3574-1R, 'Red Pontiac', and ND3595-17R (Table 8). Some lines had a relatively high percentage of tubers over 2.5 inch diameter. These were ND3595-17R, 'Red Pontiac', 'Viking', 'Red LaSoda', and 'Fontenot'. 'NorDonna' had reasonably high yield and a similar size distribution as 'Dark Red Norland'. All of the ND selections, 'Fontenot', and 'Red Ruby' had superior color to older varieties. There was little hollow heart or defects in any of the red selections, although 'Viking' had some knobs and growth cracks.

The highest yielding white selections were ND2417-6, B0178-34, 'Atlantic', NDA2031-2, ND2470-27, and 'Itaska' (all over 400 cwt/acre). ND2417-6 had the highest yield with similar maturity and solids content as 'Norchip', but slightly larger average tuber distribution. Nearly all lines had yields ranging from 300 to 425 cwt/acre. The lowest yielding clones were ND3914-4 and ND860-2. There were few external quality problems, except clone ND3647-6 had > 20% growth cracks and 'Norchip' had some knobs and growth cracks. The percentage U.S. No. 1 tubers was high in

almost all lines. The lines with the highest solids content were 'Mainechip', 'ND2471-8', and 'Atlantic'. 'Mainechip', 'Atlantic', and B0178-34 had problems with hollow heart in larger tubers.

'Goldrush' and 'Russet Burbank' had the highest yields (over 400 cwt/acre) among russetted selections. Size was relatively small. Only four lines: A82119-3, A8390-3, 'Shepody', and 'Russet Norkotah' had more than 30% of the yield in the 10 to 16 oz class. 'Russet Burbank' had less than 10% in that weight category. All russetted lines had acceptable levels of solids; 'Ranger' and AO84275-3 had the highest solids content. 'Shepody' had higher solids content than 'Russet Burbank', which is unusual but was also true in the nitrogen x variety trial at a nearby Oakes location. Perhaps the late maturity encouraged by the warm summer nights reduced solids content of late-maturing varieties. A82119-3 had > 10% growth cracks; 'Russet Burbank' and 'Ranger Russet' had > 10% knobs. Russetted lines with some problem with hollow heart were A8390-3, A82119-3, 'Norking', and 'Russet Burbank'. No advanced NDSU lines were included among the russetted lines.

Management of new varieties under irrigation. The optimum rate of nitrogen in all irrigated trials this year was about 150 lbs/acre. 'Russet Burbank' was more sensitive to higher nitrogen rates than 'Goldrush', 'Ranger Russet', or 'Shepody'.

Resistance Testing

All selections in the trials are evaluated for scab and silver scurf at harvest, and susceptible selections dropped. Advanced red-skinned selections were evaluated for resistance to silver scurf in replicated trials. None of the selections or standard varieties evaluated showed good resistance to silver scurf.

Fifteen advanced selections were evaluated for plant reaction to bacterial ring rot. Visual symptoms, as well as actual quantification of the causal bacterium with microscopy is conducted. Evaluations are still being conducted and will be reported at a later date.

Dr. Secor received potato material from Dr. John Helgeson at the University of Wisconsin-Madison that showed very high levels of resistance to late blight in Dr. Secor's field evaluations. This resistant material will be used as parents in the North Dakota breeding program this coming year.

Germplasm Enhancement

For any breeding program to be successful, it needs genetic diversity in its germplasm. We will be

incorporating European and Japanese advanced selections and varieties into our crossing program to broaden our genetic base. The Japanese varieties may also have good cold-chipping in that chemical inhibition of sprouting is not allowed in Japan. Therefore, varieties have had to be developed that can be stored at 38° F and be used for chipping with little or no reconditioning.

Approximately 7,000 clones were screened for resistance to the Colorado Potato Beetle, and resistance of more advanced material was confirmed in advanced trials. Some of the beetle-resistant material has high vigor and yield, and acceptable size and shape for chipping varieties. These populations have both white, russet and red individuals, some of which have exceptional skin color and resistance to skinning. This material is nearly at the stage where resistant selections have the potential to be varieties.

Table 1. Spacing, Fertilizer, Soil Type, Planting and Harvest Dates of the 1995 North Dakota Potato Variety Trials.

Location	Spacing		Fertilizer	Soil Types	Planting Date	Harvest Date
	Row	Plant				
Grand Forks	38"	12"	68-30-0 @ 187.5 #/A	Bearden clay loam	5-29	10-12
Oakes	38"	12"	120# N, 50# P, 50# K, 10# Zn	Hecla fine sandy loam	5-5	9-21

Table 2. Performance of Potato Varieties and Selections Grown at Grand Forks, ND in 1995.

Variety or Selection	U.S. #1 Cwt/Acre	Total Cwt/Acre	% U.S. #1 Yield	Specific Gravity	% Total Solids	General Rating
Chieftain	106	121	87	76	18.8	3.9
Red Pontiac	95	107	89	72	18.0	3.3
Norchip	94	113	83	81	19.9	3.8
Atlantic	92	105	88	99	23.7	3.9
ND3647-6	92	111	83	86	20.9	4.0
NorKing Russet	91	104	88	86	20.9	4.1
ND2676-10	90	103	87	85	20.7	4.1
I 426	89	105	85	80	19.7	3.9
ND2470-27	87	103	85	79	19.4	3.9
Red Ruby	86	107	80	73	18.2	4.0
Goldrush	84	102	82	81	19.9	3.5
ND3828-15	80	91	88	76	18.8	4.1
ND2417-6	77	97	79	82	20.1	3.9
Ranger	76	103	74	89	21.6	3.3
ND2471-8	75	86	87	95	22.9	3.9
ND5084-3R	73	93	79	63	16.0	3.8
N8-14	72	95	76	84	20.5	3.9
ND2225-1R	72	86	84	70	17.5	4.0
ND4027-4Russ	71	89	80	84	20.5	3.9
ND4654-4R	71	102	70	81	19.9	3.5
ND3595-17R	68	74	92	68	17.1	3.8
ND01496-1	66	83	80	89	21.6	3.8
ND4093-4Russ	66	77	86	79	19.4	3.5
Russet Norkotah	64	82	78	79	19.4	3.6
Norqueen Russet	61	75	81	75	18.6	3.9
ND3574-5R	60	70	86	67	16.9	4.1
ND3636-1	59	72	82	84	20.5	3.9
Dark Red Norland	55	73	75	67	16.9	3.9
A8337-2	54	73	74	84	20.5	3.5
NorDonna	53	64	83	78	19.2	4.3
Shepody	53	79	67	80	19.7	3.0
AND8673-1Russ	53	68	78	80	19.7	3.6
Niska	51	65	79	81	19.9	3.4
ND3455-1Russ	50	69	73	74	18.4	3.5
Snowden	48	62	77	93	22.4	3.4
ND3196-1R	48	54	89	72	18.0	3.9
ND3530-13R	48	61	79	82	20.1	4.0
A81286-1	46	54	85	79	19.4	3.1
A81480-8	46	73	63	71	17.7	3.5
ND2050-1R	42	90	47	71	17.7	3.5
A08478-1	40	73	55	86	20.9	3.3
ND860-2	34	46	74	78	19.2	3.3
NDA2031-2	33	61	54	80	19.7	3.3
Russet Burbank	25	67	37	82	20.1	3.0
ND3914-4	25	31	81	--	--	3.8

Table 3: Trial of Advanced Idaho Selections and Standard Cultivars at Grand Forks, ND - 1995.

Selection or Cultivar	U.S. #1 Yield (cwt/A)	Total Yield (cwt/A)	% U.S. # 1 Yield	General Rating
Goldrush	88	122	72	3.3
Ranger	83	119	70	3
A79180-10	79	93	85	3
Russet Norkotah	79	114	69	3
Shepody	64	107	60	3
Russet Burbank	53	127	42	3
A82119-3	51	72	71	3
A080432-1	50	72	69	3
A81473-2	40	75	53	3
A82622-52	23	57	40	3
A084275-3	17	48	35	3

Table 4. European Varieties and Advanced Selections Trial at Grand Forks, ND - 1995.

Variety or Selection	Usage ¹	U.S. #1 (cwt/A)	Total (cwt/A)	% US #1 Yield	Specific Gravity	Total Solids	General Rating
Can AGRICO Potato Corp., Grand Falls, NB, Canada							
Bright	F	56.3	102.5	54.9	96	23.1	3.3
Estima	T	56.3	80.0	70.4	89	21.6	3.3
Fianna	C,T	39.2	105.8	37.1	93	22.4	3.0
Hertha	C	39.7	63.6	62.4	101	24.2	3.3
Penta	T	86.0	127.8	67.3	92	22.2	3.3
Sante	T	108.0	142.5	75.8	89	21.6	3.8
Hettema North America, Charlottetown, P.E.I., Canada							
Morene	T,F	96.0	136.3	70.4	90	21.8	3.5
Svalof Weibull/Bonis and Co., Lindsay, Ontario, Canada							
Hulda	C	56.6	100.9	56.1	105	25.0	3.0
Lily	T,F	51.4	108.3	47.5	91	22.0	3.0
Matilda	T	52.8	117.0	45.1	100	24.0	3.3
Ofelia	T	65.0	120.5	53.9	83	20.3	3.0
Rosamunda	T	87.3	124.6	70.1	97	23.3	3.5
SW88109	T,C	139.5	171.6	81.3	81	19.9	3.8
SW88113	T,F	55.2	98.7	55.9	86	20.9	3.3
SW91102	C	54.1	99.8	54.2	99	23.7	3.0
Potato Seed Production Limited of Northern Ireland							
Dundrod	N.A.	48.1	68.5	70.2	85	20.7	3.0
Check Varieties							
Norchip	C	65.8	93.0	70.7	86	20.9	3.5
Shepody	F,T	69.1	83.8	82.5	87	21.2	3.0
Avanti	N.A.	71.8	99.0	72.5	83	20.3	3.3
Dk Red Norland	T	72.4	92.2	78.5	67	16.9	3.8

¹ C = chipping; F = french fries; T = tablestock; N.A. = no information available

Table 5. 1995 Chip Tests (Agtron) and Percent Yield of Cultivars and Selections Grown in State Trial at Park River, ND in 1994.

Variety or Selection	First Chipping: 40° Since Harvest ¹	Second Chipping: 65° for Two Weeks ²	Third Chipping: 65° for Four Weeks ³	Percent Chip Yield ⁵
--- Agtron Reading ⁴ ---				
Atlantic	31.0	48.0	56.0	36.5
Goldrush	17.5	28.5	40.0	33.3
Norchip	24.5	36.5	52.5	35.6
NorKing Russet	13.5	33.0	37.5	33.2
Norqueen Russet	22.0	32.0	35.0	32.8
Ranger	16.5	34.0	36.5	36.3
Russet Burbank	16.5	37.5	42.5	33.7
Russet Norkotah	13.5	31.5	39.5	34.4
Shepody	12.0	30.5	46.5	34.2
Snowden	23.5	57.0	61.0	34.9
A81478-1	16.5	34.0	41.0	35.1
A8337-2	16.5	25.5	34.0	34.0
A8390-3	12.0	28.5	36.5	34.8
A081775-3	16.5	27.0	47.0	33.8
A08478-1	16.0	30.5	44.0	34.4
N8-14	43.0	54.0	59.5	33.8
NDA2031-2	43.0	24.5	56.5	33.5
ND01496-1	28.5	41.0	50.0	34.3
ND860-2	41.5	49.5	58.5	33.5
ND2417-6	27.5	41.0	52.0	36.8
ND2470-27	40.5	45.5	58.5	35.8
ND2471-8	28.5	38.5	45.5	34.8
ND2676-4	31.5	41.0	59.0	33.0
ND2676-10	48.0	57.0	58.5	35.4
ND3914-4	28.0	54.5	56.5	33.5

¹ Chipped on 1/10/95

² Chipped on 1/24/95

³ Chipped on 2/7/95

⁴ Agtron 0 - 90

0 = black; 90 = white

40 minimum acceptable color

⁵ Average of 3 trials

Table 6. 1995 Chip Tests (Agtron) and Percent Yield of Cultivars and Selections Grown in Secondary and "Idaho" Trial at Park River, ND in 1994

Variety or Selection	First Chipping: 40° Since Harvest ¹	Second Chipping: 65° for Two Weeks ²	Third Chipping: 65° for Four Weeks ³	Percent Chip Yield ⁵
— Agtron Reading ⁴ —				
Secondary Trial				
Brodick	23.5 ¹	43.5 ²	48.5 ³	31.3
Dundrod	18.0	34.5	33.5	30.3
Goldrush	12.5	29.5	31.5	29.7
Niska	21.5	34.5	49.5	31.0
Norchip	22.0	38.0	45.5	29.8
AC Ptarmigan	13.5	24.0	34.0	26.8
Russet Norkotah	13.0	33.5	33.5	29.4
Sante	11.5	36.5	51.0	30.2
AND8673-1Russ	12.0	25.5	35.5	31.8
ND3636-1	28.5	53.5	59.5	32.1
ND3647-6	42.5	57.0	60.5	31.7
Idaho (Promising Idaho Russet Selections and Checks)				
Goldrush	13.0	23.5	34.0	29.5
Ranger	14.5	28.5	37.5	31.9
Russet Burbank	15.5	31.0	39.0	29.8
Russet Norkotah	11.5	25.5	33.5	29.7
Shepody	11.5	25.0	35.0	31.6
A79180-10	12.5	16.5	23.0	30.5
A81286-1	13.0	22.0	32.5	28.4
A81473-1	14.0	26.5	28.5	33.8
A82119-3	16.5	28.5	34.5	29.5
A82622-52	18.5	28.5	36.0	33.0
A080432-1	12.5	17.5	24.0	29.8
A084275-3	13.5	22.0	34.5	29.5

¹ Chipped on 1/12/95

² Chipped on 1/26/95

³ Chipped on 2/9/95

⁴ Agtron 0 - 90

0 = black; 90 = white;

40 minimum acceptable color

⁵ Average of 3 trials

Table 7. Average French Fry Evaluation Scores for 1994 Season.

Cultivar or Selection	Color	Texture	Flavor
North Dakota			
Russ. Burbank	6.1	5.8	5.5
Ore-Ida	6.4	5.9	6.5
Simplot Control	7.4	6.7	6.1
NorKing Russet	7.7	7.0	6.9
Norqueen Russet	5.8	4.9	5.6
Ranger	7.2	5.9	5.7
Shepody	6.3	6.0	6.0
A81286-1	7.5	5.9	5.7
A82622-52	6.8	6.0	6.4
A084275-3	6.7	5.1	6.1
A79180-10	8.2	7.2	6.7
A81473-2	6.2	5.0	5.1
A080432-1	7.9	7.1	6.6
Russet Norkotah	5.7	5.9	5.1

Rating Guide	7-9	Good
	5-6	Fair, but acceptable
	1-4	Poor, not acceptable

Table 8. Performance of red, white and russet potato varieties and selections under irrigation at Oakes, North Dakota in 1995.

Variety or Selection	Yield (cwt/A)	Percent U.S. #1	Percent Solids	Color ¹	Maturity ³
Reds					
Red LaSoda	429.6	88.8	18.8	5.3	4.8
Fontenot	401.6	90.3	21.1	6.3	4.0
ND3574-5R	383.8	93.5	18.3	6.8	3.0
Red Pontiac	373.6	95.3	17.9	4.8	4.8
NorDonna	365.4	96.0	19.0	6.3	4.5
Dark Red Norland	358.5	92.4	18.0	4.8	3.0
ND3595-17R	356.5	92.3	18.3	6.3	3.8
ND3196-1R	338.1	93.5	21.3	6.5	3.3
ND2225-1R	326.4	90.0	18.5	6.5	3.8
Red Ruby	313.8	90.3	19.1	5.5	4.0
Viking	306.9	75.8	20.6	4.3	4.0
ND2050-1R	303.9	91.9	19.8	5.8	2.5
ND3530-13R	252.9	91.7	19.8	6.5	3.8
Variety or Selection	Yield (cwt/A)	Percent U.S. #1	Percent Solids	Hollow Heart Ranking ²	Maturity
Whites					
ND2417-6	466.5	92.9	21.5	0.5	4.5
B0178-34	457.8	92.9	24.3	5.8	5.5
NDA2031-2	428.6	95.6	21.1	1.5	4.8
Atlantic	426.9	93.3	23.3	6.5	5.3
ND2470-27	424.7	91.5	21.6	2.5	4.5
Itaska	414.2	89.3	19.6	0.0	3.8
Norchip	395.7	84.7	21.6	0.8	4.8
ND2471-8	393.3	93.4	23.3	2.5	4.3
ND01496-1	392.2	94.9	22.6	2.5	4.8
ND2676-10	364.0	93.2	21.4	3.8	4.8
Chipeta	361.7	92.0	20.6	2.3	6.0
Mainechip	354.7	91.8	23.5	6.8	3.8
Snowden	342.4	97.1	22.6	3.5	4.8
ND3636-1	327.5	92.6	21.6	1.3	3.5
N8-14	326.4	88.5	21.5	0.0	4.3

Table 8. Continued

Variety or Selection	Yield (cwt/A)	Percent U.S. #1	Percent Solids	Hollow Heart Ranking	Maturity
ND3647-6	322.5	72.1	20.2	0.5	3.3
ND860-2	298.8	91.7	20.5	0.0	3.5
ND3914-4	212.4	94.7	18.8	0.8	3.8
Russets					
Goldrush	424.4	92.2	20.9	0.5	4.5
Russet Burbank	406.4	74.9	20.6	3.3	6.0
A82119-3	385.9	86.3	22.0	3.3	5.0
Russet Norkotah	385.2	92.6	21.5	1.5	3.5
Shepody	384.2	94.7	22.0	0.5	4.3
A8390-3	351.2	86.6	21.5	4.3	5.0
Ranger Russet	349.0	80.0	23.1	1.5	5.3
Norqueen	345.9	85.2	20.0	2.3	4.0
Norking	329.4	89.4	22.0	3.8	4.3
A084275-3	309.0	91.0	23.0	1.8	6.3

¹ Color 1 = white; 3 = pink; 5 = red; 7 = dark red; 9 = very dark red

² Number of largest 12 tubers in plot with hollow heart

³ Maturity Key: 1 = very early; 9 = extremely late

OHIO

Richard Hassell, David M. Kelly, E.C. Wittmeyer, John Elliott, and Elaine Grassbaugh

Introduction

Thirty-six varieties and clones from the NE107 Regional project were evaluated in replicated field trials located at the Ohio Agricultural Research and Development Center, Wooster, Ohio.

Methods

The seed samples when received from the NE107 project nursery were stored under recommended temperature and humidity conditions. A randomized complete block design with four replications was used.

The soil type is a well-drained Wooster silt loam with a pH 6.2, a phosphorus level of 132 lbs. and a potassium level of 190 lbs, according to the analytical procedures of the Research and Extension Analytical Laboratory at the Ohio Agricultural Research and Development Center.

Fertilization consisted of 600 lbs/A of 10-20-20 disked in prior to planting and 600 lbs/A 10-20-20 sidedressed at planting.

Following harvest on September 25, samples for chip quality evaluation were taken to the Pilot Plant, The Ohio State University, Columbus, Ohio, where the samples were held at ambient temperatures until early October (approximately 20 days) when chipping and specific gravity determinations were made. In addition, other samples were graded for market quality. At the time 10 tubers were taken at random from each replicate for hollow heart and internal necrosis ratings (see Table 2).

Weather Conditions

Rainfall during the growing season (May-September) was 15.50 inches, 3.31 inches below the long-term average for Wooster.

Results

Entries producing more than 225 cwt/A U.S. No. 1 included AF1425-1, B0257-12, AF1475-

16, ND2417-6, B0464-8, Snowden, AF1433-4, AF1438-1, Chieftain, and B0163-2. The range in U.S. No. 1 yields of these entries ranged from 229 cwt/A to 276 cwt/A.

Entries with specific gravity above 1.085 included B0257-12, AF1475-16, B0405-4, B0585-5, ND2471-8, Snowden, Mainechip, AF1379-3, NY95, Atlantic, AF875-15, and B0172-22. The only entries showing hollow heart and internal discoloration were B0405-4, AF1455-9, Chieftain and Atlantic.

On the basis of this trial under these environmental conditions the following clones are worth further trial and possible testing on commercial farms: B0245-15, AF1425-1, B0257-12, AF1475-16, AF875-15, AF1424-7, Cherry Red, AF1438-1, B0172-22, ND1871-3R, B0564-8, ND2471-8, AF1433-4.

Ohio Table 1. Yield, marketable yield, percent of yield by grade size distribution and specific gravity for varieties grown at Wooster, Ohio - 1995. (Northeast)

Cultivar	Total Yield cwt/A	Size Distribution by Classes					
		Marketable Yield			% of Total Yield		
		U.S.#1 cwt/A	% STD	U.S.#1 (>1-7/8")	B size	Culls	Specific gravity
B0245-15	222	195	.94	88	5	7	1.083
AF1425-1	279	229	1.11	82	6	12	1.080
AF1060-2	346	211	1.02	61	9	30	1.074
B0257-12	341	235	1.14	69	7	24	1.089
AF1475-16	283	235	1.14	83	5	12	1.085
ND2417-6	328	262	1.26	80	9	11	1.079
AF875-15	267	174	.84	65	7	28	1.091
AF1424-7	214	171	.83	80	9	11	1.084
AF1481-4	147	103	.50	70	10	20	1.084
B0172-22	225	162	.78	72	5	23	1.091
ND1871-3R	293	196	.95	67	21	12	1.079
AF1455-9	228	150	.72	66	21	13	1.077
B0405-4	237	121	.58	51	7	42	1.092
B0585-5	255	168	.81	66	6	28	1.089
Yukon Gold	252	204	.99	81	6	13	1.078
B0564-8	290	229	1.11	79	13	8	1.084
ND2471-8	291	218	1.05	75	7	18	1.085
Red Ruby	319	217	1.05	68	24	8	1.065
Superior	239	184	.89	77	8	15	1.079
St. Johns	243	160	.77	66	5	29	1.077
NY87	256	202	.98	79	7	14	1.079
Snowden	300	276	1.33	92	4	4	1.094
Cherry Red	260	218	1.05	84	5	11	1.083
Mainechip	270	197	.95	73	9	18	1.093
Kennebec	321	180	.81	56	9	35	1.078
1379-3	276	204	.99	74	17	9	1.085
NY95	215	178	.86	83	10	7	1.098
AF1433-4	296	334	1.13	79	6	15	1.073
AF1426-1	322	174	.84	54	5	41	1.082
AF1438-1	318	232	1.12	73	11	16	1.076
Katahdin (std.)	259	207	1.00	80	8	12	1.066
Dark Red Norland	223	190	.92	85	6	9	1.065
Chieftain	328	233	1.13	71	7	22	1.072
B0564-9	283	198	.96	70	9	21	1.084
B0163-2	338	264	1.28	78	10	11	1.070
Atlantic	285	214	1.03	75	10	15	1.099

Ohio Table 2.

Tuber shape and appearance, hollow heart ratings, internal necrosis ratings and chip color for varieties grown at Wooster, Ohio - 1995. (Northeast)

Cultivar	Plant maturity	Tuber shape	Appearance ²	Hollow heart	Internal ¹ necrosis	Chip ³ * color
B0245-15	4.0	6.00	4.5	0	0	1
AF1425-1	4.6	3.25	4.5	0	0	1
AF1060-2	2.0	2.00	3.0	0	0	2.5
B0257-12	4.5	3.00	3.50	0	0	1
AF1475-16	3.8	3.00	6.50	0	0	1
ND2417-6	4.8	4.50	4.75	0	0	1
AF875-15	4.0	3.25	3.25	0	0	1
AF1424-7	3.0	3.00	5.50	0	0	1
AF1481-4	6.0	6.75	5.25	0	0	1
B0172-22	6.0	3.25	4.25	0	0	1.5
ND1871-3R	3.5	2.00	3.75	0	0	1
RF1455-9	4.5	2.00	4.75	0	5	1
B0405-4	7.0	3.00	4.00	0	40	2
B0585-5	4.5	2.00	4.00	0	0	1
Yukon Gold	5.0	3.00	4.00	0	0	2
B0564-8	3.5	2.00	4.75	0	0	1
ND2471-8	2.5	2.00	4.75	0	0	1
Red Ruby	4.0	3.00	3.00	0	0	2
Superior	2.7	3.00	3.50	0	0	1
St. Johns	5.5	3.75	3.75	0	0	1
NY87	4.0	3.00	5.75	0	0	1
Snowden	4.5	2.75	4.75	0	0	1
Cherry Red	2.8	3.00	5.50	0	0	1.5
Mainechip	3.5	2.00	4.25	5	0	1
Kennebec	8.0	3.75	2.50	0	0	1
AFB79-3	4.5	3.00	4.75	0	0	1.5
NY95	3.0	3.00	4.25	0	0	1
AF1423-4	4.5	3.75	3.50	0	0	1
AF1426-1	4.5	4.00	2.00	0	0	1
AF1438-1	2.3	3.00	5.25	0	0	1
Katahdin	4.7	2.00	4.25	0	0	1.5
Dark Red Norland	1.0	2.00	3.75	0	0	1
Chieftain	2.0	3.00	4.25	0	2	2.5
B0564-9	3.5	3.00	3.50	0	0	1
B0163-2	4.0	2.00	4.50	0	0	1
Atlantic	4.5	2.00	3.50	7.5	0	1

²See standard NE107 rating system

³PC/SFA standard

Ohio Table 3.

Plant stand, percent blister, Agtron readings, and additional tuber data for varieties grown at Wooster, Ohio - 1995. (Northeast)

Cultivar	Plant Stand %	Blister % ²	Tuber Data		
			skin texture	eye depth	skin color
B0245-15	92	0	7.00	4.50	7.00
AF1425-1	89	10	5.75	5.75	6.00
AF1060-2	93	20	6.75	6.75	6.75
B0257-12	94	0	5.75	6.25	5.25
AF1475-16	82	10	7.00	6.50	7.00
ND2417-6	90	0	6.75	6.75	7.00
AF875-15	84	0	5.00	5.00	5.00
AF1424-7	84	10	6.00	7.00	6.50
AF1481-4	59	10	3.00	6.75	4.00
B0172-22	87	20	6.50	6.25	7.00
ND1871-3R	91	10	6.00	5.00	2.00
RF1455-9	88	10	6.50	6.00	6.00
B0405-4	88	0	5.00	5.50	5.00
B0585-5	72	10	6.50	6.25	5.25
Yukon Gold	72	30	6.00	6.00	6.75
B0564-8	93	10	5.00	6.00	5.50
ND2471-8	83	0	7.00	6.00	7.00
Red Ruby	94	0	7.00	6.00	2.00
Superior	88	10	5.00	5.25	6.00
St. Johns	82	0	6.75	5.75	6.00
NY87	92	20	6.75	6.00	6.25
Snowden	95	10	5.00	6.00	4.75
Cherry Red	92	10	5.00	6.00	2.00
Mainechip	93	20	7.00	6.00	7.00
Kennebec	87	0	6.00	6.00	7.00
AFB79-3	86	0	7.00	5.75	7.00
NY95	92	10	5.75	7.00	5.75
AF1423-4	83	0	6.75	5.75	7.00
AF1426-1	90	10	5.00	6.00	5.00
AF1438-1	73	10	7.00	7.00	7.00
Katahdin	93	10	6.00	5.00	7.00
Dark Red Norland	87	0	6.00	5.00	2.00
Chieftain	94	20	7.00	5.00	2.00
B0564-9	89	0	5.25	6.50	4.75
B0163-2	83	0	5.00	6.00	6.00
Atlantic	81	10	5.00	4.50	6.00

²Percentage of chips that develop blisters greater than 20 mm in diameter during the frying process.

³See standard NE107 rating system.

**TUBER DATA RATING SYSTEM FOR
POTATO VARIETY TRIALS - NE-107**

<u>Tuber Skin Color</u>	<u>Skin Texture</u>	<u>Tuber Shape</u>
1. Purple	1. Part. russet	1. Round
2. Red	2. Heavy russet	2. Mostly round
3. Pink	3. Mod. russet	3. Round to oblong
4. Dark brown	4. Light russet	4. Mostly oblong
5. Brown	5. Netted	5. Oblong to long
6. Tan	6. Slight netting	6. Mostly long
7. Buff	7. Moderately	7. Long
8. White	8. Smooth	8. Cylindrical
9. Cream	9. Very smooth	

<u>Eye Depth</u>	<u>Appearance</u>
1. VD	1. Very poor
2. --	2. --
3. D	3. Poor
4. --	4. --
5. Intermediate	5. Fair
6. --	6. --
7. S	7. Good
8. --	8. --
9. VS	9. Excellent

PLANT RATING SYSTEM

<u>Plant Type</u>	<u>Air Pollution</u>
1. decumbent-poor canopy	0. dead
2. decumbent-fair canopy	1. decreasing plant appearance
3. decumbent-good canopy	2. with varying degrees
4. spreading-poor canopy	3. of defoliation
5. spreading-fair canopy	4.
6. spreading-good canopy	5. most leaves have symptoms, but generally appearance is still good
7. upright-poor canopy	6. good plant condition with decreasing
8. upright-fair canopy	7. percent of foliar symptoms
9. upright-good canopy	8.
	9. no symptoms

<u>Plant Size</u>	<u>Plant Maturity</u>	<u>Plant Appearance</u>
1. very small	1. very early	1. very poor
2. +	2. early	2. poor
3. small	3. +	3. +
4. +	4. medium early	4. --
5. medium	5. medium	5. fair
6. +	6. medium late	6. +
7. large	7. +	7. --
8. +	8. late	8. good
9. very large	9. very late	9. excellent

OREGON

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Introduction

Trials described herein include: (1) a statewide comparison of 33 entries at Madras, Ontario and Klamath Falls (a fourth location at Hermiston was eliminated because of severe hail injury); (2) chipping trials at Corvallis and Suver in the Willamette Valley; and (3) russet and red-skinned fresh market trials at Corvallis.

All crops were grown using spacing, fertilization, irrigation, pest control and other inputs common to the producing areas. No unusual problems were observed except for loss of the Hermiston planting as noted.

Oregon Statewide Trial

COO83008-1, an Oregon selection from the Colorado State University breeding program, appeared to be the most promising of the 28 numbered lines evaluated at three branch stations. As usual, it produced high U.S. No. 1 yields, good solids, and very good french fry color (Table 1). Tubers tend to have a lower tuber length/width ratio than Russet Burbank and other leading french fry varieties in warm, long-season sites but less noticeably so in cool, high elevation areas such as central Oregon and eastern Idaho. In fact, it has created considerable interest among tablestock producers in the latter areas. Tubers bake well and have outstanding texture and flavor. Oregon will release COO83008-1 in cooperation with Colorado, Washington and Idaho in 1996.

AO82611-7, also scheduled for release by Oregon and cooperating states and agencies in 1996 or 1997, did not perform as well as expected with only average yields and good, but not outstanding, fry color. AO82611-7 and other full-season processing selections would probably have ranked higher if the Hermiston trial had survived. Unlike Hermiston and Ontario, both Klamath Falls and Madras are short-season areas and typically do not maximize yield performance of late varieties.

COO90071-1 also produced excellent yields and solids. Fry color was comparable to Russet Burbank but considerably darker than COO83008-1 and several other selections. Other entries worthy of mention include: AO89128-4 (average yields but good solids and fry color); AO87277-6 (good yields, solids and fry color); AO87119-3 (tablestock only); and AO90017-4 which

produced only average yields, but good solids and better than average fry color.

As noted under "comments" in Table 1, most of the early-generation selections in this trial are usually discarded for any of several reasons.

Chipping Trials

Fifteen entries were compared at Corvallis (Tables 2-4) and 14 in a commercial field at Suver, 25 miles north of Corvallis (Tables 5-7).

Several entries performed well at Corvallis. ATX85404-8 produced extremely high yields and exceptionally good color in all fry tests (Tables 2-4); however, it was highly susceptible to hollow heart and early sprouting even at 40°F. Despite these faults, ATX85404-8 is an interesting selection worthy of further study. Relative to Snowden and Atlantic, several entries showed better fry color at both 40 and 50 degrees and considerably higher yields. The Oregon selection NDO1496-1 produced good yields and fry color but has been notably susceptible to shatter bruise in previous tests; the risk of shatter bruise in this selection is considered unacceptably high by Oregon workers.

Other entries showing good potential at Corvallis include: FL-1833, FL-1815, BCO894-2, NDA2031-2 and Chipeta. Chipeta was highly susceptible to hollow heart, possibly because of large tuber size, and produced relatively dark fries at 40°F; fry color was acceptable at 50°F, however.

Neither Snowden nor Atlantic performed well at Suver (Tables 5-7). Reasons for poor yields are not clear, but seed source and quality may possibly have been a factor. Surprisingly, AC83306-1 which yielded poorly at Corvallis led all entries at Suver; it fried lighter than Snowden in most instances, but several other entries were slightly lighter. FL-1815 appears to be the better of the two Frito-Lay entries at these two testing sites. FL-1815 produced good yields and exceptional fry color in all tests. ATX85404-8 performed well at Suver, also, but again showed a tendency toward early sprouting in storage. Hollow-heart was not an important factor in the Suver planting. NDA2471-8, NDA2417-6 and NDO1496-1 also performed moderately well at Suver but all three showed a tendency toward early sprouting even at 40°.

Fresh Market Reds

Seedborne viruses, especially PVY, confounded results of this trial. Most of the Oregon selections (NDO's)

showed high levels of contamination.

U.S. No. 1 yields ranged from 534 cwt/acre for A82705-1R down to 176 for NDO4592-3R (Table 8). Although these results can not be considered conclusive, it seems apparent that Dark Red Norland continues to be a good choice for Willamette Valley growers.

Fresh Market Russets

The chipping variety FL-1815 was included in this trial because of its bright yellow flesh (Table 9). Interestingly, FL-1815 lead all entries in U.S. No. 1 yield with 413 cwt/acre. The culinary quality of FL-1815 merits further study. It seems possible that this selection could find acceptance for fresh market as well as chipping. A second marketing option could be useful for chip processors as well as growers.

AO84275-3, an Oregon selection from the Aberdeen, Idaho program, ranked second in No. 1 yield. It produces oblong russet tubers and has considerable resistance to several diseases. AO84275-3 was seriously considered for release by Washington, Oregon and Idaho because of potential integrated pest management applications. Release now seems doubtful, however, because of mediocre performance in Washington trials in 1995.

Century Russet continued to yield well as did NDO2904-7. NDO2904-7 will be discarded by Oregon workers because of occasional high glycoalkaloid levels.

Oregon Table 1. Average Performance of 33 Potato Clones at Four Oregon Locations¹

Entry	Yield (cwt/a)		US No. 1		Oz/ Tuber	L/W ²	Spec. Grav.	Fry Color ³	HH	Percent ⁴			Comments
	Total	No. 1	Rank	%						BS	BC	IBS	
Russet Burbank	400	259	29	65	4.55	1.84	1.085	35.8	6	0	19	0	Poor, Growth Cracks
Lemhi	344	270	27	78	5.91	1.65	1.087	34.7	8	25	0	0	Lumpy, Growth Cracks
Shepody	406	332	13	82	8.21	1.72	1.082	32.4	1	5	2	5	Knobs, Greening, Big
Russet Norkotah	374	294	22	79	7.23	1.77	1.074	31.6	8	0	0	0	Nice, Smooth
Atlantic	513	451	1	88	5.39	1.04	1.097	43.8	16	5	2	4	Nice, Deep Bud Ends
AO82611-7	418	320	16	76	6.27	1.80	1.088	37.7	0	9	0	0	Pointed, Rough
COO83008-1	482	420	3	87	5.42	1.54	1.092	41.0	3	0	3	0	Nice, Slightly Course
NDO2904-7	458	392	5	85	7.87	1.83	1.074	32.5	0	0	0	0	Flat, Skinning
AO85165-1	425	359	9	85	5.94	1.72	1.078	29.8	4	0	0	0	Big, Fair
AO87018-23	341	276	25	81	5.41	1.72	1.087	34.3	11	1	0	0	Discard
AO87119-3	451	354	11	79	6.45	1.96	1.070	32.0	0	0	0	0	Nice, Good Length
AO87277-6	436	357	10	82	6.17	1.92	1.091	40.4	1	3	0	0	Nice, Some Pointed
AO89128-4	444	330	14	74	4.28	1.98	1.095	44.4	0	0	0	0	Long & Skinny
AO89142-2	431	379	6	88	7.27	1.66	1.083	34.0	1	0	0	0	Discard
COO90071-1	525	441	2	84	5.28	1.69	1.090	34.2	0	9	0	0	Dark Skin, Fair
AO85058-10	268	202	32	75	5.26	1.97	1.084	43.1	9	5	0	8	Discard
AO89396-3	381	309	19	81	5.17	2.08	1.081	42.7	4	1	0	0	Discard
AO90007-1	373	311	17	83	6.59	1.88	1.088	39.4	0	4	2	0	Discard
AO90007-11	453	378	7	84	6.22	1.83	1.078	35.7	6	0	0	0	Discard

¹ Average values for 4-replicate trials at Hermiston, Klamath Falls, Ontario, and Powell Butte² Length divided by Width³ Reflectance readings, high numbers signify light french fry color⁴ HH=hollow heart; BS=blackspot bruise; BC=brown center; IBS=internal brown spot

Oregon Table 1. (continued)

Entry	Yield (cwt/a)		US No. 1		Oz/ Tuber	L/W ²	Spec.		Fry Color ³	HH	Percent ⁴			Comments
	Total	No. 1	Rank	%			Grav.				BS	BC	IBS	
AO90014-1	405	310	18	77	5.13	2.03	1.086		45.6	0	0	0	0	Light Skin, O.K.
AO90017-4	460	321	15	70	4.58	2.00	1.090		38.7	3	1	0	0	Nice, Smooth
AO90021-9	414	274	26	66	3.76	1.81	1.089		44.3	0	0	0	0	Discard
AO90033-6	325	229	30	70	5.83	2.04	1.077		33.7	0	0	0	0	Discard
AO90033-7	374	297	21	79	6.36	2.01	1.078		30.2	0	1	0	0	Discard
AO90036-5	381	289	23	76	4.86	1.72	1.095		45.9	6	0	0	0	Discard
AO90045-13	476	417	4	88	5.87	1.63	1.086		37.7	4	1	0	1	Roundish, Course
AO90072-3	331	268	28	81	4.89	1.93	1.093		44.7	0	5	0	0	Discard
AO90087-3	452	347	12	77	5.58	1.71	1.078		39.0	4	3	0	1	Discard
AO90088-1	487	375	8	77	4.67	1.67	1.092		38.7	0	3	2	0	Roundish, Light Skin
AO90089-5	384	228	31	59	3.39	1.80	1.098		37.6	0	5	0	0	Discard
AO90310-2	380	288	24	76	5.60	1.97	1.087		43.3	0	1	0	0	Discard
AO90319-1	392	299	20	76	4.54	1.82	1.085		30.9	2	9	0	0	Nice, Smooth
AO90321-1	209	139	33	67	5.58	1.67	1.083		32.3	3	8	0	2	Discard

¹ Average values for 4-replicate trials at Hermiston, Klamath Falls, Ontario, and Powell Butte² Length divided by Width³ Reflectance readings, high numbers signify light french fry color⁴ HH=hollow heart; BS=blackspot bruise; BC=brown center; IBS=internal brown spot

Oregon Table 2. Yield, quality, and tuber size characteristics of 15 chipping varieties and selections at Corvallis, OR. 1995.

Variety	Yield (cwt/a)				Percent							oz/				
	Total	B's <4oz	US #1		Total	US #1	Culls	B's	US #1			Percent¹		tuber	%HH²	%VD²
			4-12oz.	>12oz.					4-12oz.	>12oz.	K	GC				
ND2417-6	419.6	64.6	284.5	34.9	319.4	35.6	15.6	68.0	8.0	8.4	0.2	3.8	1.8	5.0	18.0	0.0
Atlantic	350.0	41.3	187.9	84.9	272.9	35.9	12.3	54.2	23.1	10.5	0.1	3.0	5.1	5.8	18.0	1.0
Snowden	489.6	73.8	364.3	33.7	398.0	17.9	15.3	74.1	7.1	3.6	0.3	0.4	2.4	4.7	15.0	2.0
FL-1833	481.4	32.3	331.1	94.1	425.2	24.0	7.2	69.4	18.7	4.8	0.0	0.1	5.6	6.3	6.0	0.0
NDO1496-1	506.8	45.5	341.2	81.7	422.8	38.5	10.1	66.5	15.8	7.5	0.0	1.5	5.3	5.6	5.0	1.0
BCO894-2	549.1	47.7	381.7	70.5	452.2	49.2	8.7	69.7	12.8	8.9	0.2	1.4	6.9	6.2	0.0	0.0
FL-1815	482.5	30.3	322.5	96.2	418.7	33.6	6.2	67.4	19.6	6.7	0.3	1.3	4.7	7.0	3.0	0.0
ATX85404-8	627.5	83.2	454.2	63.8	518.0	26.3	13.4	72.3	10.1	4.2	0.3	0.7	2.1	5.1	26.0	0.0
FL-1859	364.6	49.7	225.9	44.6	270.5	44.4	14.6	62.4	11.3	11.8	0.4	5.5	1.2	5.7	0.0	0.0
FL-1867	423.3	57.3	339.9	17.7	357.6	8.4	13.5	80.3	4.2	2.0	0.4	0.8	0.8	4.8	11.0	1.0
ND2471-8	439.8	48.1	300.2	53.9	354.0	37.6	11.0	68.3	12.1	8.6	0.3	4.1	1.9	5.5	15.0	0.0
FL-1625	451.5	41.0	315.1	75.6	390.7	19.9	9.0	70.1	16.7	4.4	0.4	2.4	1.0	6.3	23.0	2.0
NDA2031-2	594.4	102.0	445.3	25.5	470.8	21.6	17.5	74.9	4.1	3.5	0.2	0.9	1.8	4.8	1.0	0.0
Chipeta	515.9	22.4	278.7	130.0	408.7	84.8	4.3	54.1	24.9	16.7	0.9	9.4	3.2	7.7	25.0	0.0
AC83306-1	509.8	34.5	298.8	95.0	393.8	81.5	6.8	58.0	18.8	16.4	0.2	8.2	3.0	6.6	7.0	2.0
Mean	480.4	51.6	324.7	66.8	391.5	37.3	11.0	67.3	13.8	7.8	0.3	2.9	3.1	5.8	11.5	0.6
CV	14.8	25.2	17.0	46.3	17.6	53.4	30.8	8.7	39.0	50.1	171.8	83.9	51.2	11.4	71.6	225.4
LSD (0.05)	101.3	18.6	78.6	44.1	98.4	28.4	4.9	8.4	7.7	5.6	NS	NS	2.3	0.9	11.8	NS

¹ K = Knobs; GC = Growth Crack; GR = Green
² HH = Hollow Heart, VD = Vascular Discoloration; figures based on 25 US #1 tubers per replication

Oregon Table 3. Specific gravity, fry color, and sprouting characteristics of 15 chipping varieties and selections at Corvallis, OR. 1995.

Variety	Spec. Grav. ¹	10/30/95	Agtron ²	Chip Color 10/30/95	PC/SFA ³	Agtron ²	Chip Color 40° 12/13/95	PC/SFA ³	Agtron ²	Chip Color 50° 12/13/95	PC/SFA ³	40°	50°	% Sprouted 12/13/95
ND2417-6	1.096		46.1		1.6	29.1	3.3		45.5		1.7	0.0	0.0	
Atlantic	1.092		46.8		1.5	27.5	3.5		44.1		1.8	0.0	0.0	
Snowden	1.095		47.7		1.5	22.6	4.0		46.6		1.6	0.0	0.0	
FL-1833	1.096		48.0		1.4	32.4	3.0		45.8		1.7	0.0	0.0	
NDO1496-1	1.098		50.4		1.2	31.0	3.1		47.6		1.4	0.0	0.0	
BCO894-2	1.081		49.7		1.3	28.1	3.4		46.2		1.6	0.0	0.0	
FL-1815	1.092		49.4		1.3	36.2	2.6		48.9		1.3	0.0	0.0	
ATX85404-8	1.085		50.4		1.2	30.0	3.2		48.7		1.4	0.0	0.0	
FL-1859	1.093		48.6		1.4	22.0	4.0		41.7		2.0	0.0	0.0	
FL-1867	1.098		47.5		1.5	34.5	2.7		49.0		1.3	0.0	0.0	
ND2471-8	1.092		44.5		1.8	26.1	3.6		44.8		1.7	0.0	0.0	
FL-1625	1.104		47.3		1.5	26.3	3.6		46.9		1.5	0.0	0.0	
NDA2031-2	1.083		50.1		1.2	30.3	3.2		47.1		1.5	0.0	0.0	
Chipeta	1.091		50.0		1.2	24.8	3.7		44.9		1.7	0.0	0.0	
AC83306-1	1.088		48.2		1.4	30.1	3.2		46.6		1.6	0.0	0.0	
Mean	1.092		48.3		1.4	28.7	3.3		46.3		1.6	0.0	0.0	
CV	0.4		4.6		16.4	11.6	10.0		4.9		14.4	0.0	0.0	
LSD (0.05)	0.006		3.2		0.3	4.7	0.5		3.2		0.3	NS	NS	

¹ Air/water method² Agtron reflectance value (red filter), high numbers = light color³ Potato Chip Snack Food Association value, low numbers = light color

Oregon Table 4. Fry color, and sprouting characteristics of 15 chipping varieties and selections at Corvallis, OR. 1995.

Variety	Chip Color 40° 2/15/96		Chip Color 50° 2/15/96		% Sprouted 2/15/96		Sprout Length ³ 2/15/96	
	Agtron ¹	PC/SFA ²	Agtron ¹	PC/SFA ²	40°	50°	40°	50°
ND2417-6	25.1	3.7	42.0	2.0	75.2	100.0	0.08	0.25
Atlantic	20.5	4.2	41.1	2.1	100.0	100.0	0.08	1.88
Snowden	24.3	3.8	43.0	1.9	81.5	100.0	0.08	1.44
FL-1833	26.9	3.5	46.5	1.6	100.0	100.0	0.08	0.50
NDO1496-1	26.9	3.5	43.3	1.9	60.0	100.0	0.06	2.00
BCO894-2	23.8	3.8	43.6	1.9	73.1	100.0	0.08	1.63
FL-1815	28.3	3.4	43.4	1.9	0.0	100.0	0.0	0.25
ATX85404-8	30.2	3.2	44.4	1.8	100.0	100.0	0.08	4.00
FL-1859	16.5	4.5	39.7	2.2	0.0	100.0	0.0	0.31
FL-1867	30.0	3.2	48.4	1.4	19.0	100.0	0.06	0.56
ND2471-8	25.1	3.7	39.6	2.2	89.5	100.0	0.08	0.25
FL-1625	26.6	3.6	40.5	2.2	32.9	100.0	0.06	0.94
NDA2031-2	31.1	3.1	45.1	1.7	100.0	100.0	0.08	1.63
Chipeta	21.1	4.1	43.3	1.9	80.3	100.0	0.08	0.44
AC83306-1	25.2	3.7	45.1	1.7	63.2	100.0	0.08	1.4
Mean	25.4	3.6	43.3	1.9	0.0	100.0	0.07	1.16
CV	12.6	8.6	8.0	----	65.0	----	27.2	37.3
LSD (0.05)	4.6	0.4	4.9	NS	37.8	NS	0.03	0.62

¹ Agtron reflectance value (red filter), high numbers = light color² Potato Chip Snack Food Association value, low numbers = light color³ Sprout Length expressed in inches (>0.08 = peeping)

Oregon Table 5. Yield, quality, and tuber characteristics of 14 chipping varieties and selections at Suver, OR. 1995.

Variety	Yield (cwt/a)					Percent					Percent ¹					oz/ tuber	%HH ²	%VD ²
	Total	B's <4oz	US #1 4-12oz.	US #1 >12oz.	Total	US #1 4-12oz.	US #1 >12oz.	Culls	B's	Culls	US #1	Culls	K	GC	GR			
ND2417-6	398.3	57.6	257.5	53.3	310.7	30.0	15.5	65.4	12.3	6.8	0.2	0.5	4.6	4.5	0.0	0.0		
Atlantic	298.0	38.1	174.7	57.8	232.4	27.5	14.2	57.8	18.5	9.6	0.5	0.8	5.5	5.0	2.7	0.0		
Snowden	308.0	77.2	204.0	13.2	217.2	13.5	27.2	64.8	3.5	4.6	0.0	0.0	3.4	3.5	0.0	0.0		
FL-1833	353.9	28.7	230.0	66.0	296.0	29.2	8.3	65.0	17.4	9.3	0.0	0.2	6.9	5.7	0.0	0.0		
NDO1496-1	383.9	47.1	251.2	44.7	296.0	40.8	12.5	65.6	11.8	10.2	0.0	2.0	5.2	4.9	3.0	0.0		
BCO894-2	364.3	44.6	232.2	15.2	247.4	72.4	12.3	64.1	4.2	19.5	0.0	0.2	16.8	4.7	0.0	0.0		
FL-1815	409.6	27.3	255.8	88.8	344.6	37.7	6.6	62.6	21.6	9.2	0.3	0.0	7.2	5.9	0.0	0.0		
ATX85404-8	476.1	60.1	335.7	59.0	394.7	21.3	13.0	70.0	12.3	4.7	0.2	0.4	3.4	4.9	1.0	2.0		
FL-1859	320.3	36.0	148.9	66.3	215.2	69.1	11.6	46.7	19.5	22.2	1.4	1.3	8.5	5.4	0.0	1.3		
FL-1867	343.9	78.7	221.6	13.2	234.8	30.4	23.5	63.3	4.1	9.2	0.0	0.0	2.0	3.7	0.0	0.0		
ND2471-8	411.5	55.9	265.4	52.0	317.4	38.2	14.0	64.0	12.4	9.6	0.0	0.8	6.8	4.6	0.0	3.0		
FL-1625	305.1	48.6	221.4	24.1	245.5	11.0	16.5	71.9	7.9	3.9	0.0	0.6	2.3	4.4	0.0	1.0		
NDA2031-2	323.6	75.2	191.0	11.0	202.0	46.4	24.4	58.7	3.2	13.7	0.1	0.1	9.4	3.5	0.0	0.0		
AC83306-1	458.2	28.3	226.3	181.1	407.3	22.7	7.0	50.6	37.1	5.3	0.3	1.0	3.2	7.0	0.0	3.0		
Mean	368.2	50.2	229.7	53.3	282.9	35.0	14.7	62.2	13.3	9.8	0.2	0.6	6.1	4.8	0.5	0.7		
CV	16.8	22.9	21.7	55.6	23.0	64.1	30.0	12.2	39.7	62.6	144.6	104.9	74.2	11.1	315.1	166.5		
LSD (0.05)	88.4	16.5	71.3	42.4	93.0	32.1	6.3	10.8	7.5	8.8	0.4	0.8	6.5	0.8	NS	1.8		

¹ K = Knobs; GC = Growth Crack; GR = Green² HH = Hollow Heart, VD = Vascular Discoloration; figures based on 25 US #1 tubers per replication

Oregon Table 6. Specific gravity, fry color, and sprouting characteristics of 14 chipping varieties and selections at Suver, OR. 1995.

Variety	Spec.		Chip Color		Chip Color 40°		Chip Color 50°		% Sprouted	
	Grav. ¹		10/30/95		12/13/95		12/13/95		12/13/95	
	10/30/95		Agtron ²	PC/SFA ³	Agtron ²	PC/SFA ³	Agtron ²	PC/SFA ³	40°	50°
ND2417-6	1.095		45.2	1.7	32.7	2.9	45.8	1.7	0.0	0.0
Atlantic	1.092		45.2	1.7	27.6	3.5	46.1	1.6	0.0	0.0
Snowden	1.094		43.7	1.8	29.2	3.3	45.4	1.7	0.0	0.0
FL-1833	1.089		46.6	1.6	36.8	2.6	46.5	1.6	0.0	0.0
NDO1496-1	1.090		46.6	1.6	33.7	2.8	47.1	1.5	0.0	0.0
BCO894-2	1.074		45.1	1.7	31.4	3.0	44.6	1.7	0.0	0.0
FL-1815	1.084		46.7	1.5	38.2	2.4	47.0	1.5	0.0	0.0
ATX85404-8	1.084		44.9	1.7	30.2	3.2	46.9	1.5	0.0	0.0
FL-1859	1.088		45.1	1.7	27.6	3.5	47.7	1.4	0.0	0.0
FL-1867	1.099		46.9	1.5	38.1	2.4	48.4	1.4	0.0	0.0
ND2471-8	1.096		44.0	1.8	31.5	3.0	45.0	1.7	0.0	0.0
FL-1625	1.094		43.6	1.9	35.1	2.7	45.9	1.6	0.0	0.0
NDA2031-2	1.077		45.9	1.6	35.7	2.6	45.6	1.7	0.0	0.0
AC83306-1	1.084		45.4	1.7	31.6	3.0	45.8	1.6	0.0	0.0
Mean	1.088		45.4	1.7	32.8	2.9	46.2	1.6	0.0	0.0
CV	0.4		3.3	9.7	9.4	10.5	3.1	9.4	0.0	0.0
LSD (0.05)	0.006		2.2	NS	4.4	0.4	2.1	0.2	NS	NS

¹ Air/water method² Agtron reflectance value (red filter), high numbers = light color³ Potato Chip Snack Food Association value, low numbers = light color

Oregon Table 7. Fry color, and sprouting characteristics of 15 chipping varieties and selections at Suver, OR. 1995.

Variety	Chip Color 40°		Chip Color 50°		% Sprouted		Sprout Length ³	
	2/15/96		2/15/96		2/15/96		2/15/96	
	Agtron ¹	PC/SFA ²	Agtron ¹	PC/SFA ²	40°	50°	40°	50°
ND2417-6	30.2	3.2	40.2	2.2	97.0	100.0	0.08	0.13
Atlantic	26.8	3.5	42.4	2.0	99.0	100.0	0.08	0.13
Snowden	33.7	2.9	41.9	2.0	83.3	100.0	0.08	0.13
FL-1833	33.1	2.9	43.2	1.9	67.5	100.0	0.08	0.13
NDO1496-1	37.1	2.5	43.9	1.8	96.2	100.0	0.08	0.13
BCO894-2	31.4	3.1	41.0	2.1	84.7	100.0	0.08	0.13
FL-1815	38.0	2.4	44.8	1.7	0.0	100.0	0.0	0.13
ATX85404-8	35.6	2.7	39.0	2.3	100.0	100.0	0.08	0.13
FL-1859	20.6	4.1	42.6	1.9	27.1	100.0	0.04	0.13
FL-1867	39.8	2.2	42.9	1.9	78.7	100.0	0.08	0.13
ND2471-8	30.1	3.2	40.2	2.2	96.7	100.0	0.08	0.13
FL-1625	33.1	2.9	39.8	2.2	50.2	100.0	0.08	0.13
NDA2031-2	38.1	2.4	43.1	1.9	70.6	100.0	0.08	0.13
AC83306-1	31.0	3.1	42.6	2.0	41.2	100.0	0.06	0.13
Mean	32.7	2.9	42.0	2.0	70.9	100.0	0.07	0.13
CV	10.8	12.1	5.3	11.2	32.1	----	23.8	----
LSD (0.05)	5.1	0.5	3.2	0.3	32.5	NS	0.02	NS

¹ Agtron reflectance value (red filter), high numbers = light color² Potato Chip Snack Food Association value, low numbers = light color³ Sprout Length expressed in inches (>0.08 = peeping), all tubers treated with a sprout inhibitor

Oregon Table 8. Yield, quality, specific gravity, and tuber size characteristics of 18 red-skinned varieties and selections at Corvallis, OR. 1995.

Variety	Yield (cwt/a)										Percent							oz/ tuber	%HH ⁴	%BC ⁴	Spec. Grav. ⁵
	Total	C's ¹ <2oz	B's ² 2-4oz	US#1			Total US#1	Culls	C's	B's 2-4oz	US#1			Percent ³							
				US#1 <12oz	US#1 4-12oz	US#1 >12oz					Culls	US#1 4-12oz	US#1 >12oz	K	GC	GR					
NDO4300-1R	417.6	17.4	59.3	280.1	32.8	312.9	28.0	4.2	14.6	67.8	7.4	6.0	0.1	2.0	2.6	5.0	2.0	1.0	1.065		
NDO4578-1R	475.6	23.3	85.9	309.6	23.2	332.8	33.7	5.0	18.0	64.8	4.9	7.4	0.4	2.5	1.3	4.6	6.0	2.0	1.065		
Red LaSoda	516.6	6.4	22.8	313.3	135.7	449.1	38.4	1.2	4.6	60.7	26.2	7.3	0.4	4.0	1.4	7.5	0.0	1.0	1.075		
NDO4784-2R	323.0	15.4	78.7	203.1	10.7	213.8	15.1	4.8	24.4	62.9	3.4	4.7	0.0	1.1	2.6	3.8	0.0	0.0	1.069		
CO86142-3R	474.2	14.0	55.4	336.3	24.5	360.9	43.9	3.2	12.4	70.0	4.9	9.6	0.1	6.6	0.6	5.4	0.0	1.0	1.074		
NDO2438-6R	327.8	10.6	42.9	219.5	38.7	258.3	16.2	3.3	13.1	66.2	12.6	4.9	0.6	0.3	2.5	5.1	1.0	1.0	1.061		
NDO4592-3R	268.5	13.2	33.7	137.1	39.0	176.1	45.5	4.9	12.5	51.1	14.4	17.2	0.2	5.1	3.6	4.8	4.0	7.0	1.068		
CO86218-2R	456.5	11.8	41.6	266.3	85.0	351.2	51.9	2.7	9.7	58.3	18.2	11.1	0.2	1.2	7.0	5.8	16.0	3.0	1.074		
A82705-1R	632.2	11.4	48.8	372.2	162.6	534.8	37.3	1.8	7.7	58.9	25.6	6.1	0.1	2.0	3.0	6.8	0.0	1.0	1.077		
COTX86146-2R	315.6	19.1	49.1	137.8	52.7	190.4	57.0	6.2	16.0	43.4	15.9	18.4	0.5	7.6	2.4	4.6	2.0	2.0	1.065		
COO86107-1R	442.6	11.2	58.4	284.0	23.5	307.5	65.5	2.6	13.0	63.9	5.4	15.3	0.1	10.0	1.3	5.2	0.0	4.0	1.080		
NDO2469-1R	417.2	12.8	60.3	258.9	26.1	285.0	59.3	3.1	14.9	61.8	6.1	14.1	0.0	9.5	0.8	5.1	1.0	2.0	1.073		
NDO4588-5R	438.4	14.1	41.9	300.6	57.2	357.8	24.5	3.2	9.5	68.8	12.9	5.6	1.3	0.8	2.7	5.6	29.0	1.0	1.066		
NDO4323-2R	599.5	11.5	48.6	398.3	68.5	466.8	72.7	1.9	8.2	66.5	11.0	12.4	0.2	5.7	2.5	6.1	1.0	3.0	1.076		
NDO2686-6R	327.5	25.8	81.2	191.0	16.0	207.0	13.5	9.4	28.0	54.5	4.4	3.7	0.0	1.4	1.3	4.0	1.0	2.0	1.072		
Dk. R. Norland	602.8	10.4	39.1	369.3	68.9	438.2	115.1	1.8	6.5	61.2	11.5	19.1	0.8	12.9	2.4	7.5	7.0	1.0	1.073		
NDO2438-7R	274.4	14.3	49.7	158.2	23.3	181.5	28.9	5.4	17.7	57.8	7.7	11.4	0.0	6.5	1.8	4.2	2.0	3.0	1.067		
NDO4615-1R	327.5	11.2	30.7	181.2	45.5	226.7	58.9	3.5	9.5	55.3	13.5	18.4	0.6	8.5	2.9	5.7	8.0	0.0	1.085		
Mean	424.3	14.1	51.6	262.1	51.9	313.9	44.7	3.8	13.3	60.8	11.4	10.7	0.3	4.9	2.4	5.4	4.4	1.9	1.071		
CV	16.4	27.9	26.2	20.7	41.8	20.4	37.7	43.5	32.4	11.0	41.5	38.7	134.4	52.2	53.3	12.8	157.5	120.6	0.3		
LSD (0.05)	98.7	5.6	19.2	77.1	30.8	91.0	24.0	2.3	6.1	9.5	6.7	5.9	0.6	3.6	1.8	1.0	9.9	3.3	0.0047		

¹ < 1 3/4 inch diameter² 1 3/4 - 2 1/4 inch diameter³ K = Knobs; GC = Growth Cracks; GR = Green⁴ HH = Hollow Heart; BC = Brown Center; figures based on 25 US#1 tubers per replication⁵ Air/water method

Oregon Table 9. Yield, quality, specific gravity, and tuber size characteristics of 13 russet-skinned varieties and selections at Corvallis, OR. 1995.

Variety	Yield (cwt/a)						Percent						oz/ tuber	%HH ²	%BC ²	Spec. Grav. ³			
	Total	B's 4-12oz	US#1 4-12oz	US#1 US#1	Total	No.	Culls	B's 4-12oz	US#1 US#1	US#1 US#1	No.	Percent ¹							
												Culls					K	GC	GR
R. Norkotah	362.0	66.0	185.7	78.7	264.5	7.8	23.8	18.8	50.7	22.6	1.8	6.2	1.7	0.6	1.7	6.0	24.0	2.0	1.073
AO82611-7	430.0	101.1	189.6	48.9	238.5	22.0	68.3	23.7	43.8	11.4	5.2	16.0	5.8	1.0	1.8	5.6	15.0	0.0	1.092
NDO2904-7	411.5	45.7	215.2	118.0	333.2	6.1	26.6	11.2	52.2	28.6	1.5	6.6	1.1	1.6	1.4	6.8	27.0	0.0	1.076
FL-1815	472.1	29.1	338.1	74.9	412.9	0.8	29.4	6.0	71.8	15.8	0.2	6.3	0.0	0.5	5.4	6.4	2.0	0.0	1.096
COO83008-1	329.5	37.3	196.8	65.2	262.0	8.7	21.6	11.1	60.3	19.2	2.4	7.1	0.3	3.7	0.4	6.1	32.0	1.0	1.091
Century R.	491.3	106.2	300.2	61.5	361.7	9.8	13.7	22.3	61.0	11.9	2.0	2.9	0.3	0.5	0.8	5.2	5.0	0.0	1.089
AO89142-2	346.6	33.7	132.8	135.0	267.7	8.1	37.1	9.8	38.2	38.3	2.5	11.3	4.5	1.2	1.1	8.2	3.0	0.0	1.078
AO85165-1	352.0	57.5	165.4	87.9	253.3	9.8	31.5	16.2	47.1	25.2	2.7	8.8	2.1	2.0	1.3	5.8	51.0	2.0	1.068
AO87018-23	423.9	65.2	205.1	89.3	294.4	12.6	51.7	15.5	48.1	21.5	2.9	12.0	1.7	4.8	2.2	6.3	62.0	1.0	1.081
AO89128-4	423.0	167.1	198.5	35.7	234.2	11.5	10.2	39.6	47.0	8.1	2.8	2.5	0.5	0.6	0.2	4.6	34.0	2.0	1.102
R. Burbank	491.5	150.7	263.7	33.4	297.1	20.0	23.8	31.4	53.2	6.7	3.9	4.8	1.3	0.5	0.1	4.4	29.0	0.0	1.093
AO84275-3	506.8	93.5	326.7	50.8	377.5	12.1	23.8	18.6	64.4	10.0	2.4	4.6	0.6	1.2	1.6	5.0	43.0	0.0	1.096
Mean	420.0	79.4	226.5	73.3	299.7	10.8	30.1	18.7	53.1	18.3	2.5	7.4	1.7	1.5	1.5	5.9	27.3	0.7	1.086
CV	15.1	22.6	18.8	41.9	19.8	72.7	47.4	23.7	10.4	33.4	72.6	49.0	87.1	85.2	65.7	9.6	34.2	295.4	0.4
LSD (0.05)	91.0	25.9	61.1	44.1	85.5	11.3	20.5	6.4	7.9	8.8	NS	5.2	2.1	1.9	1.4	0.8	13.4	NS	0.006
																			5

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¹ K = Knobs; GC = Growth Crack; GR = Green² HH = Hollow Heart, BC = Brown Center; figures based on 25 US#1 tubers per replication³ Air/water method

Pennsylvania

B. J. Christ, M. W. Peck and D. M. Petrunak

The potato evaluation trial was conducted at the Russell E. Larson Agricultural Center at Rock Springs, PA. This trial is part of an extensive and on-going project that evaluates promising clones for yield, and chip processing potential. Clones that are identified as excellent performers are then evaluated in regional trials across Pennsylvania.

Materials and Methods

The trial was planted on May 24 in single row plots as a randomized complete block design with four replications. Plots were 10 feet in length with 36 inches between rows and 8 inches between seed pieces. Fertilizer, 929 lb/A of 10-10-10, N-P-K, was banded at planting. The plots were vine killed on September 15 and harvested on October 17.

Specific gravity was determined by the weight-in-air/weight-in water method. Tubers were held at ambient temperature until they were placed in storage. Samples were chipped four times throughout the winter. Four tubers from each clone were peeled, cut in half and sliced. Eight slices from the center of each half were used for the chip sample and were fried at 365 F. The chip samples were rated on a 1-10 scale according to a modified snack food color chart.

Results

May and June were cool and wet. However, the remainder of the season was hot and dry. There were 4.9, 1.3 and 0.8 inches of rainfall in June, July and August, respectively. The plots were irrigated with 1.5, 4.5 and 1.5 inches in July, August and the first week of September, respectively. There were numerous clones that had yield greater than Atlantic or Katahdin. However, of those clones with high yield, there were only 14 clones, B0178-34, B0766-3, B1027-6, AF1668-60, NY87, M28-3, N15-3, P7-19, P23-31, NDO1496-1, B0585-5, B1279-4, AF1426-1 and N50-3 that had out of field chip color lighter than Atlantic. Of these same high yielding clones, B0178-34, B0766-3, B1016-3, NY87, N15-3, P7-19, P23-31, NDO1496-1 and N50-3 also were chipping as light or better than Snowden out of storage. Other lines that were excellent chippers out of storage were AF1455-20, AF1556-3, E11-45, Pike, Andover, NY102, M14-1, M19-4, P29-1, ND2417-6 and P29-2 (Table 1). Potential tablestock clones with yield higher than Katahdin were NY101, NY103, Mainstay,

AF1470-17, AF1455-20, AF1570-1, AF1612-8, AF1657-3, AF1675-1, B0984-3, B0856-4, B1088-37 and B1150-5. High yielding reds included B0811-13, N38-4, N51-1, P49-19R, B0811-3, B0984-1, P49-13R, P49-20R, and P50-4R (Table 2). The clones having the best red color skin out of storage were B0984-1, N51-1, B0811-13 and B0985-1. A high yielding clone with purple skin was B0967-11. Century Russet was the highest yielding russet with most of the pick outs, 36%, as oversized tubers.

Acknowledgments:

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Pennsylvania Table 1. Total and US #1 yield, percentage US #1, specific gravity, and chip color results from round white potato evaluation trial in Centre County, Pennsylvania.

Cultivar	Yield (cwt/A)			Specific Gravity	ChipColor				
	Total	2-4"	% 2-4"		Nov ¹	Dec ²	Jan ³	Feb ⁴	Jan ⁵
Replicated									
Atlantic	337	300	87	1.091	5	6	6	6	5
Katahdin	318	271	85	1.076	-	-	-	-	-
Superior	388	335	84	1.077	6	7	8	7	7
Snowden	292	197	67	1.089	4	4	5	3	6
Dundrod	287	219	73	1.073	-	-	-	-	-
B0564-8	386	335	86	1.083	5	5	7	6	7
B0178-34	354	300	83	1.098	4	5	5	5	6
B0717-1	391	321	82	1.092	5	5	7	5	7
B0766-3	398	365	91	1.084	4	5	5	5	5
B0984-3§	314	271	86	1.068	5	5	10	10	9
B1016-3	488	434	89	1.092	6	5	5	5	6
B1027-6	384	322	84	1.093	4	5	6	6	6
B0856-4	478	436	91	1.074	5	5	6	5	7
B0892-7	337	263	77	1.089	4	5	6	5	6
B1081-4	396	336	85	1.100	6	6	5	6	5
B1088-37	545	515	94	1.082	7	7	6	8	8
B1090-19	379	336	88	1.090	5	4	6	5	7
B1157-5	319	209	64	1.075	6	5	6	7	8
B1150-5	557	504	90	1.068	6	6	7	6	7
AF1377-6	332	305	92	1.076	7	7	8	6	7
AF1455-20	341	277	80	1.093	5	5	5	4	7
AF1556-3	258	184	71	1.081	3	4	7	5	7
AF1569-3	339	268	79	1.082	5	7	8	7	8
AF1570-1	390	350	89	1.077	5	5	8	6	8
AF1612-8	390	288	71	1.074	7	7	7	8	8
AF1657-3	348	294	84	1.081	6	6	8	7	7
AF1668-60	315	290	92	1.083	4	4	5	4	5
AF1668-62	283	210	74	1.086	4	4	6	5	7
AF1675-1	385	333	86	1.083	5	7	7	7	7
AF1470-17	483	398	81	1.068	7	8	8	9	10
Mainestay	523	427	80	1.080	-	-	-	-	-
E11-45	206	154	73	1.064	4	4	5	5	7
Pike	282	211	75	1.094	4	5	6	4	6
Andover	325	283	86	1.080	5	4	6	5	6
NY 87	368	302	81	1.081	4	4	6	5	5
NY 95	328	241	73	1.094	4	5	6	5	6
NY 101§	454	400	87	1.075	6	6	6	4	-
NY 102	347	294	85	1.090	5	4	5	4	6
NY 103	405	366	90	1.077	5	6	4	5	7
M14-1	362	295	81	1.087	5	5	5	4	7
M14-6	372	353	95	1.091	5	5	6	5	6
M19-3	406	363	89	1.074	6	5	7	5	7
M19-4	306	262	86	1.082	5	5	5	4	7
M28-3	332	294	88	1.079	4	5	6	6	7
N15-3	367	288	78	1.097	4	5	5	4	6
N15-8	292	267	91	1.088	4	5	6	4	7
P1-101	326	268	82	1.088	4	5	5	6	6
P7-19	342	299	88	1.081	4	4	5	3	6
P13-110	276	215	77	1.069	4	5	6	6	8
P18-8	388	313	80	1.091	5	4	6	5	7
P23-31	326	289	89	1.082	4	4	5	4	6
P29-1	270	240	89	1.076	4	3	5	4	5
NDO1496-1	391	293	74	1.090	3	4	5	4	5
ND2417-6	277	191	67	1.079	3	5	5	5	6
ND2471-8	322	264	81	1.087	5	5	6	6	6

Pennsylvania Table 1. Continued

Cultivar	Yield (cwt/A)			Specific Gravity	ChipColor				
	Total	2-4"	% 2-4"		Nov ¹	Dec ²	Jan ³	Feb ⁴	Jan ⁵
Hulda§	229	98	43	1.092	5	5	5	5	6
Ofelia§	320	175	54	1.068	7	6	6	6	8
Lily§	368	190	50	1.071	6	6	6	7	8
SW88109§	441	283	64	1.069	7	7	10	9	9
SW88113§	460	321	70	1.078	7	7	7	7	8
Matilda§	306	105	34	1.089	7	6	7	7	8
SW91102§	448	278	61	1.096	6	5	5	5	7
LSD (p = 0.05)	118	117	10						
Nonreplicated									
B0564-9	384	355	92	1.082	7	6	7	7	7
B0585-5	368	354	96	1.081	4	4	6	5	6
B0972-10§	359	330	92	1.070	8	7	10	10	10
B1083-51	332	299	90	1.093	7	6	8	7	7
B1091-29	288	247	86	1.078	6	6	8	7	8
B1110-11	295	240	81	1.087	5	5	7	4	7
B1210-1	517	478	92	1.071	8	8	8	8	8
B1210-6	429	315	73	1.078	8	7	8	7	8
B1210-11	478	433	91	1.074	8	8	8	8	9
B1216-3	428	336	79	1.073	5	6	6	7	8
B1273-5	411	369	90	1.099	6	6	7	7	7
B1279-4	316	292	92	1.092	4	5	6	5	6
AF1426-1	368	348	95	1.081	4	5	7	7	7
AF1713-1	309	224	73	1.075	5	5	9	10	8
AF1714-2	340	311	92	1.083	8	7	8	9	9
W91-9826	274	123	45	1.101	5	5	6	6	7
N15-18	323	275	85	1.093	5	4	6	5	7
N50-3	293	240	82	1.082	4	3	4	3	5
P23-17	283	257	91	1.077	4	4	6	5	7
P29-2	332	240	72	1.082	5	3	5	3	5

¹ Stored at 55⁰ F from November 1 and chipped on November 14, 1995.

² Stored at 55⁰ F from November 1 and chipped on December 14, 1995.

³ Stored at 40⁰ F from November 13, 1995 then transferred to 55⁰ F three weeks prior to chipping on January 30, 1996.

⁴ Stored at 40⁰ F from November 13, 1995 then transferred to 55⁰ F six weeks prior to chipping on February 22, 1996.

⁵ Stored at 40⁰ F from November 13 and chipped on January 16, 1996.

§ = yellow flesh

Chip color is based on a 1-10 scale with 1 = lightest, 10 = darkest, and 1-5 = acceptable chip color.

Pennsylvania Table 2. Total and US #1 yield, percentage US #1, and specific gravity results from red and russet potato evaluation trial in Centre County, Pennsylvania.

Cultivar	Yield (cwt/A)			Specific Gravity
	Total	2-4"	% 2-4"	
Replicated				
Reds				
Chieftain	342	297	87	1.073
Norland	272	190	68	1.058
B0811-13§	410	328	79	1.079
B0967-11£	474	415	86	1.081
B1145-2	250	169	66	1.062
N38-4	394	360	91	1.067
N38-5	324	280	86	1.075
N51-1	580	557	96	1.070
P49-19R	407	373	92	1.067
ND1871-3R	318	256	81	1.072
ND2225-1R	257	194	75	1.069
LSD (p = 0.05)	107	115	11	
Russet				
Russet Norkotah	287	176	60	1.075
Century Russet	431	336	77	1.088
Norking Russet	313	224	70	1.083
Frontier Russet	308	223	70	1.085
Eide Russet	415	287	67	1.087
Rus. Bake King	384	330	86	1.096
HiLite Russet	244	152	62	1.077
Russet Nugget	317	229	71	1.093
Ranger Russet	288	205	70	1.091
B1004-8	269	184	68	1.081
B0835-11	320	263	82	1.075
B0915-3	463	411	87	1.092
AF1706-18	291	144	46	1.077
B1093-21	362	324	89	1.086
LSD (p = 0.05)	81	95	13	
Nonreplicated				
Reds				
B0984-1	380	354	93	1.092
B0985-1	227	122	54	1.064
B1102-3§	278	105	38	1.072
B0852-7£	342	293	86	1.076
P49-3R	332	283	85	1.075
P49-13R	391	329	84	1.067
P49-20R	488	425	87	1.065
P50-4R	502	431	86	1.070
Russet				
B9922-11	354	332	94	1.097

§ = yellow flesh

£ = purple skin

Texas

J. Creighton Miller, Jr. and Douglas G. Smallwood

Variety Development and Testing

Seedling Program. Approximately 56,000 first-year seedlings, representing 344 families, were grown for selection near Springlake in 1995, and 277 original selections were made from this material. The 1995 first-year seedlings from Texas resulted from crosses made at the Texas Agricultural Experiment Station near Lubbock. The remainder were obtained from Joe Pavsek in Idaho (18,088), Bryce Farnsworth and Gary Secor in North Dakota (16,183), David Holm in Colorado (9,712) and Kathy Haynes in Beltsville, Maryland (5,058). The Texas program also supplied the North Dakota, Idaho and Colorado programs with second, third and fourth size seedling tubers for selection.

Adaptation Trials. The 1995 growing season was marked by below normal maximum temperatures in late May and near average temperatures in June and July. In general, vine growth was above average. The variety and advanced selection trials at Springlake were planted on April 1 and harvested on August 20. Twenty russet varieties or advanced selections were tested for their adaptability to Texas conditions (Table 1). The outstanding entries based on total yield and general rating were AC83064-1, ATX84378-1Ru (Colorado(CO) seed source), ATX84706-2Ru, and TX1385-12Ru. Others deserving mention based on general rating were ATX84378-1Ru (Idaho(ID) seed source), TX1229-2Ru, Norgold "M", Century Russet and NDO2904-7. The selection ATX84378-1Ru continues to show promise as a new variety for the Texas and Eastern New Mexico production areas because of its early maturity and rapid bulking, as well as its count carton potential and heavy netting with associated resistance to skinning. The advanced selections AC83064-1, NDTX3773-1Ru, A81286-1, A86102-6, TXAV657-27 and TX1523 produced moderately high total yield; however, a large percentage was in the under 4 ounce grade. The total yield of Century Russet was low as compared to previous years. The performance of Russet Norkotah was extremely poor.

The outstanding red varieties were LaRouge, Red LaSoda, and Viking (Table 2). Based on overall rating, other outstanding advanced selections were COTX86146-2R, NorDonna, NDO4323-2 and NDO3994-2. Red LaSoda, COTX86146-2R and NDTX8-731-8R produced significantly more 10-18 ounce tubers than all other entries. Those entries

with 70% or more U.S. No. 1's included Red LaSoda, Viking, COTX86146-2R and NDTX8-731-1R. The entries with 50% or more under 4 ounce tubers included ND2225-1R, Red Ruby, NDO4323-2, Fontenot, NorDonna, Dark Red Norland, NDO3994-2 and ND3574-5R (data not shown). High market prices are obtained for small red potatoes with deep red color.

The russet strip trial consisted of four russet varieties and twelve promising advanced selections for which sufficient seed was available for strip planting of 200 foot rows. Strip trials more closely duplicate grower conditions and represent a more advanced phase of testing than replicated variety trials. Six randomly selected plots of each entry were harvested. The outstanding entries based on total yield and general rating were TX1229-2Ru, ATX84706-2Ru, TX1385-12Ru, TXAV657-27, NDO2904-7 and ATX84378-1Ru (Table 3). Unfortunately, NDO2904-7 is high in glycoalkaloids and will be discarded for that reason. The advanced selections ATX84378-1Ru, ATX84706-2Ru, TX1385-12Ru and TX1229-2Ru produced significantly more 10-18 ounce grade potatoes than all other entries. The advanced selections TXAV657-27 and AC83064-1 ranked high in total yield; however, a large percentage of the total yield was tubers which were under 4 ounces. ATX84378-1Ru produces very uniformly shaped oblong tubers with a heavy russet skin; however, this selection can develop growth cracks and hollow heart when tubers are allowed to over size. ATX84706-2Ru produces oblong tubers with a light russet skin, and appears to be somewhat resistant to second growth when compared to other entries. TX1229-2Ru produces very smooth, large oblong tubers which have a light russet skin. TX1385-12Ru produces slightly rough oblong tubers with a light russet skin.

Based on overall general rating, the outstanding entries in the red strip trial were Red LaSoda, LaRouge, NDTX8-731-8R, Viking and NDO2438-6 (Table 4). NorDonna produced significantly more under 4 oz. tubers, which might indicate potential for specialty/creamer packs. NorDonna continues to exhibit heat sprouting, which accounts for its low general rating. NDTX8-731-1R produced a significantly greater number of large tubers (10-18 oz) than all other entries.

Twelve Texas advanced selections which were selected between 1986 and 1992 were evaluated for yield and quality (Table 5). The crosses were made in Colorado, Idaho, North Dakota and Texas. Red LaSoda, Viking, Atlantic and Russet Norkotah were grown as check varieties. The outstanding entries

based on total yield were ATX87138-2Ru, ATX87252-2Ru, NDTX4271-5R and NDTX4000-1R. Those entries deserving mention based on general rating include Red LaSoda, ATX87184-2Ru and NDTX3243-4R.

Fourteen advanced selections were compared to four check varieties in a strip trial at Hooper, Colorado (Table 6). This trial was planted on May 16 and harvested on September 29. Three randomly selected plots of each entry were harvested. Most of the entries performed quite well. The outstanding entries based on total yield and general rating include Century Russet, Norgold "M", ATX84706-2Ru, TX1385-12Ru and ATX84378-1Ru. The entry ATX84378-1Ru produced a significantly greater percentage of 10-18 oz. grade tubers than all other entries (data not shown). Entries which produced 75% or more U.S. No 1's included Century Russet, ATX84706-2Ru, CO86030-1, ATX84378-1Ru and TX1229-2Ru. The selection ATX84378-1Ru produced the largest tubers, with an average tuber weight of 8.5 ounces.

Three white potato varieties and two advanced selections were grown in a strip trial at Hooper, Colorado (Table 7). The outstanding entries based on total yield and general rating were Itasca and ATX85404-8W. Chipeta and Atlantic also performed well. ATX85404-8W had the highest specific gravity while Chipeta had the lowest, but all were satisfactory.

Texas Table 1. Total yield, yield of U.S. No.1, average tuber weight, specific gravity, tuber type, skin type and general rating of 20 russet potato varieties or advanced selections grown near Springlake, Texas - 1995.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No.1 CWT/A		Average Tuber		Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.	Weight in oz.					
AC83064-1	506.6	404.5	96.5	6.0	1.057	Long	Russet	3.0	
NDTX3773-1Ru	460.0	271.5	20.1	3.9	1.067	Oblong	Russet	2.8	
ATX84378-1Ru (CO)	445.5	388.5	194.8	7.0	1.063	Oblong	Russet	4.5	
ATX84706-2Ru	443.2	365.8	182.5	6.8	1.077	Oblong	Russet	3.8	
TX1385-12Ru	420.1	357.9	110.6	6.3	1.073	Oblong	Russet	3.5	
A81286-1	404.9	266.7	16.8	4.7	1.075	Oblong	Russet	2.8	
TX1229-2Ru	387.4	349.4	136.0	8.1	1.077	Oblong	Russet	3.8	
A86102-6	386.6	227.2	6.0	3.7	1.081	Oblong	Russet	2.8	
Norgold "M"	370.6	296.5	85.7	5.6	1.072	Oblong	Russet	3.5	
Goldrush	358.7	217.5	44.7	4.0	1.075	Oblong	Russet	2.8	
TXAV657-27	351.6	256.6	28.7	4.5	1.075	Oblong	Russet	3.0	
AC83064-6	345.6	242.5	67.0	4.8	1.074	Oblong	Russet	2.8	
Century Russet	342.3	282.3	105.0	5.8	1.074	Long	Russet	3.5	
CO85026-4	329.6	225.7	40.6	4.7	1.082	Long	Russet	3.0	
TX1523	321.8	238.4	31.3	4.7	1.078	Oblong	Russet	3.0	
ATX84378-1Ru (ID)	306.2	260.4	86.8	7.8	1.073	Oblong	Russet	4.5	
CO86153-2	276.7	187.4	5.6	4.6	1.075	Oblong	Russet	2.5	
TX1216-1Ru	270.8	149.4	0.0	3.7	1.068	Oblong	Russet	2.0	
NDO2904-7	270.0	235.8	101.7	6.6	1.062	Oblong	Russet	3.5	
CO86030-1	267.8	195.5	22.0	4.3	1.068	Oblong	Russet	2.0	
Russet Norkotah	236.9	153.5	11.5	3.9	1.065	Oblong	Russet	2.5	
Average	357.3	265.4	66.4	5.3	1.072			3.1	
L.S.D. (.05)	187.8	177.2	82.4	1.9					

1/ 1 = very poor to 5 = excellent

Texas Table 2.

Total yield, yield of U.S. No. 1, average tuber weight, specific gravity, tuber type, skin type and general rating of 17 red potato varieties or advanced selections grown near Springlake, Texas - 1995.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No.1 CWT/A		Average Tuber		Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.	Weight in oz.					
LaRouge	424.6	249.5	2.2	3.8	1.064	Round	Red	3.8	
Red LaSoda	392.5	333.3	91.6	5.7	1.063	Oblong	Red	3.8	
Redsen	384.9	222.6	0.0	3.8	1.066	Oblong	Red	3.0	
ND2225-1R	369.0	128.8	0.0	3.2	1.067	Oblong	Red	2.8	
Viking	354.2	279.9	28.5	5.0	1.067	Oblong	Red	3.8	
COTX86146-2R	346.7	285.5	91.9	5.6	1.069	Oblong	Red	3.5	
NorDonna (ND)	336.6	184.9	0.0	3.5	1.066	Oblong	Red	3.5	
Red Ruby	326.6	143.9	3.1	3.6	1.064	Oblong	Red	3.0	
NDTX8-731-8R	319.3	241.9	48.0	4.7	1.065	Oblong	Red	3.0	
NDO4323-2	305.1	101.4	0.0	2.7	1.068	Round	Red	3.5	
NDO2438-6	291.4	155.6	17.9	3.9	1.061	Round	Red	3.0	
Fontenot	284.7	106.7	0.0	3.3	1.064	Round	Red	3.5	
NorDonna (ND)	281.0	91.3	0.0	3.1	1.064	Round	Red	2.8	
Chieftain	276.8	166.5	10.6	4.3	1.065	Oblong	Red	2.8	
Dark Red Norland	274.6	136.0	12.0	3.8	1.068	Oblong	Red	2.0	
NDO3994-2	226.3	68.2	0.0	3.0	1.066	Round	Red	3.5	
ND3574-5R	182.1	58.4	0.0	3.3	1.064	Oblong	Red	3.0	
Average	316.3	173.8	18.0	3.9	1.065			3.4	
L.S.D. (.05)	71.7	53.9	20.5	0.4					

1/1 = very poor to 5 = excellent

NorDonna 9054 - Jeff Jorde, 9074 - NDSU

Texas Table 3. Total yield, yield of U.S. No.1, average tuber weight, specific gravity, tuber type, skin type and general rating of 16 russet potato varieties or advanced selections grown in a strip trial near Springlake, Texas - 1995.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No.1 CWT/A			Average Tuber		Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.	10-18 oz.	Weight in oz.	Weight in oz.				
TX1229-2Ru	425.5	390.3	147.5	147.5	7.8	7.8	1.061	Oblong	Russet	3.8
ATX84706-2Ru	390.0	355.3	123.8	123.8	7.4	7.4	1.067	Oblong	Russet	3.5
TX1385-12Ru	377.7	317.3	87.4	87.4	5.6	5.6	1.064	Oblong	Russet	3.5
TXAV657-27	376.0	267.9	6.1	6.1	4.1	4.1	1.076	Oblong	Russet	3.5
AC83064-1	370.1	260.1	27.4	27.4	5.4	5.4	1.075	Long	Russet	2.8
Century Russet	347.5	271.5	38.8	38.8	4.5	4.5	1.063	Long	Russet	3.5
Goldrush	332.7	250.3	9.8	9.8	4.4	4.4	1.064	Oblong	Russet	3.5
NDO2904-7	318.7	260.4	44.7	44.7	5.3	5.3	1.052	Oblong	Russet	3.8
ATX84378-1Ru	262.0	222.6	80.2	80.2	6.6	6.6	1.068	Oblong	Russet	3.8
CO85026-4	260.9	210.9	12.3	12.3	4.2	4.2	1.071	Long	Russet	2.8
A81286-1	260.9	203.1	12.3	12.3	4.4	4.4	1.067	Oblong	Russet	3.5
Norgold "M"	253.9	168.2	20.4	20.4	4.5	4.5	1.077	Oblong	Russet	3.5
TX1216-1Ru	248.3	157.6	0.0	0.0	3.9	3.9	1.053	Oblong	Russet	2.8
TX1523	236.1	177.9	16.5	16.5	4.8	4.8	1.063	Oblong	Russet	3.0
AC83064-6	227.7	145.8	0.0	0.0	3.7	3.7	1.062	Oblong	Russet	2.8
Russet Norkotah	121.2	65.4	0.0	0.0	3.3	3.3	1.070	Oblong	Russet	2.0
Average	300.6	232.8	39.2	39.2	5.0	5.0	1.068			3.3
L.S.D. (.05)	67.4	65.1	31.0	31.0	0.9	0.9				

1/ 1 = very poor to 5 = excellent

Texas Table 4. Total yield, yield of U.S. No. 1, average tuber weight, specific gravity, tuber type, skin type and general rating of 12 red potato varieties or advanced selections grown in a strip trial near Springlake, Texas - 1995.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No.1 CWT/A		Average Tuber		Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.	Weight in oz.					
Red LaSoda	539.1	385.2	43.0	5.7	1.062	Oblong	Red	3.8	
LaRouge	482.2	286.6	31.6	4.8	1.060	Round	Red	3.5	
NDTX8-731-8R	478.2	364.8	81.6	5.9	1.071	Oblong	Red	3.8	
Chieftain	402.3	209.5	11.2	5.0	1.067	Oblong	Red	3.0	
Red Ruby	400.3	191.6	7.8	4.8	1.063	Oblong	Red	1.8	
NorDonna	352.0	51.1	0.0	3.1	1.063	Round	Red	2.5	
Redsen	351.4	198.1	6.1	4.8	1.074	Oblong	Red	3.0	
Dark Red Norland	338.9	214.5	24.0	6.1	1.062	Oblong	Red	2.5	
Viking	338.0	230.5	0.0	5.9	1.071	Oblong	Red	3.8	
COTX86146-2R	328.2	255.3	32.4	8.1	1.065	Oblong	Red	3.0	
NDO2438-6	282.7	126.3	8.4	5.3	1.060	Round	Red	3.5	
Fontenot	262.6	91.3	0.0	3.6	1.060	Round	Red	3.0	
Average	379.7	217.1	20.5	5.3	1.063			3.1	
L.S.D. (.05)	102.1	86.1	36.2	1.2					

1/1 = very poor to 5 = excellent

Texas Table 5. Total yield, yield of U.S. No. 1, average tuber weight, tuber type, skin type and general rating of 12 Colorado-Texas, Idaho-Texas, North Dakota-Texas and Texas advanced selections grown near Springlake, Texas - 1995.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No.1 CWT/A		Average Tuber		Skin Type	General Rating 1/
		Total Yield	10-18 oz.	Weight in oz.	Tuber Type		
ATX87138-2Ru	499.1	292.8	17.9	4.3	Oblong	Russet	3.0
ATX87252-2Ru	459.3	376.2	81.6	6.1	Oblong	Russet	3.0
NDTX4271-5R	415.7	238.4	11.2	3.9	Round	Red	3.0
NDTX4000-1R	409.7	236.9	6.0	4.1	Round	Red	2.0
Red Lasoda	376.2	199.3	16.0	4.4	Oblong	Red	3.5
ATX87184-2Ru	369.1	315.9	68.5	6.4	Oblong	Russet	3.5
COTX90046-2W	367.3	122.9	3.0	2.6	Round	White	3.0
NDTX4304-1R	364.3	229.4	21.6	3.6	Round	Red	3.0
NDTX3243-4R	359.1	229.8	38.4	3.7	Oblong	Red	3.5
Viking	358.7	272.6	56.6	5.4	Oblong	Red	3.0
COTX87061-2Ru	308.0	245.1	92.0	5.7	Oblong	Russet	3.0
ATX87288-2Ru	282.7	176.5	0.0	4.7	Oblong	Russet	-
Atlantic	273.0	158.7	31.7	4.2	Oblong	White	2.8
Russet Norkotah	270.0	183.3	32.0	4.7	Oblong	Russet	2.8
COTX90046-1W	265.2	133.0	17.1	3.4	Round	White	3.0
TX1573-3Ru	245.8	122.9	8.2	3.5	Oblong	Russet	2.8
Average	351.4	220.8	31.4	4.4			2.8
L.S.D. (.05)	126.9	93.3	42.1	0.8			

1/1 = very poor to 5 = excellent

Texas Table 6. Total yield, yield of U.S. No. 1, average tuber weight, specific gravity, tuber type, skin type and general rating of 20 russet potato varieties or advanced selections grown in a strip trial near Hooper, Colorado - 1995.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No. 1 CWT/A			Average Tuber Weight in oz.	Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.	-----					
Century Russet	327.1	250.1	0.0		6.1	1.076	Long	Russet	4.0
NDTX3773-1Ru	321.5	107.7	0.0		3.4	1.066	Oblong	Russet	2.0
Norgold "M"	303.6	193.5	0.0		5.2	1.083	Oblong	Russet	3.5
ATX84706-2Ru	296.8	239.3	5.6		6.7	1.073	Oblong	Russet	3.8
Goldrush	264.9	143.2	0.0		4.4	1.078	Oblong	Russet	3.5
A86102-6	238.5	123.3	0.0		4.1	1.070	Oblong	Russet	3.0
TX1385-12Ru	230.2	108.5	0.0		5.1	1.081	Oblong	Russet	3.8
CO86030-1	221.4	170.7	10.0		6.5	1.080	Oblong	Russet	3.0
TXAV657-27	202.2	110.5	5.6		4.8	1.082	Oblong	Russet	3.0
Russet Norkotah	201.8	84.6	0.0		3.5	1.088	Oblong	Russet	2.8
AC83064-6	187.9	110.1	0.0		4.8	1.078	Oblong	Russet	2.8
TX1216-1Ru	185.9	83.4	0.0		4.1	1.079	Oblong	Russet	2.8
ATX84378-1Ru	169.5	149.6	20.3		8.5	1.071	Oblong	Russet	3.8
AC83064-1	151.2	94.5	0.0		5.1	1.078	Long	Russet	3.5
TX1523	117.7	67.4	0.0		4.4	1.072	Oblong	Russet	2.8
NDO2904-7	92.9	65.4	0.0		5.2	1.073	Oblong	Russet	3.0
TX1229-2Ru	90.6	67.8	0.0		6.6	1.074	Oblong	Russet	2.0
CO85026-4	82.2	40.3	0.0		4.4	1.079	Long	Russet	2.8
Average	204.8	122.8	2.3		5.2	1.076			3.0
L.S.D. (.05)	61.1	62.6	12.0		1.1				

1/ 1 = very poor to 5 = excellent

Texas Table 7. Total yield, yield of U.S. No.1, average tuber weight, specific gravity, tuber type, skin type and general rating of 5 white potato varieties or advanced selections grown in a strip trial near Hooper, Colorado - 1995.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No.1 CWT/A		Average Tuber		Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.	Weight in oz.					
Itasca	231.4	134.8	0.0	3.9	1.083	1.083	Oblong	White	3.8
BC0894-2	212.2	58.2	0.0	3.9	1.084	1.084	Round	White	2.8
ATX85404-8W	165.9	49.5	0.0	3.1	1.088	1.088	Round	White	3.8
Chipeta	160.4	90.2	0.0	4.9	1.081	1.081	Round	White	3.5
Atlantic	126.1	72.6	0.0	4.6	1.086	1.086	Round	White	3.5
Average	179.2	81.1	0.0	4.1	1.084	1.084			3.5
L.S.D. (.05)	83.9	83.0	0.0	0.9					
1/ 1 = very poor to 5 = excellent									

1/ 1 = very poor to 5 = excellent

Virginia

S. B. Sterrett and C. P. Savage, Jr.

Introduction

Trials were conducted at the Eastern Shore Agricultural Research and Extension Center in Painter, Virginia. Since round-white potatoes are grown commercially in this area for both fresh market and chip stock, these trials evaluate promising clones for yield, tuber quality and appearance, vine and tuber maturity, processing (chip) potential and freedom from internal and external defects. To address potential marketing niches, red-skinned and russeted clones are also evaluated for suitability in this growing area.

Methods

All trials were planted on a Bojac sandy loam soil on March 16 except the transgenic trial which was planted on March 27. Single row plots were 25 feet in length with 36 inches between rows and 12 inches between seedpieces within the row for round-white and russeted trials, 8 inches within row for red-skinned trial. Trials were planted using a randomized complete block statistical design with four replications except the transgenic with 12 replications. Fertilizer (100 lbs N, 43.7 lbs P, and 83 lbs K/A) was banded at planting with carbofuran (3 lb ai/A) + imidacloprid (0.3 lbs ai/A) banded in the furrow for Colorado potato beetle control. Nitrogen (50 lbs/A) was sidedressed 68 days after planting. Linuron (0.5 lb ai/A) and metolachlor (1.75 lbs ai/A) were applied at dragoff for all trials on April 6 except for transgenic on April 18. Irrigation was applied June 8 (0.75 inch) and June 29 (1.0 inch). Round-white trials were harvested July 10, russet and red-skinned trials on July 11 and the transgenic trial on July 19. Specific gravity was determined by the weight-in-air/weight-in-water method. Chip samples were held at ambient temperature and chipped four days after harvest.

Seasonal Observations

Growing conditions were nearly ideal, with warm, dry weather during planting followed by cool temperatures and evenly spaced rainfall through early June. Yields in commercial fields, like those in these trials were exceptionally high.

Results

Round-white Trial. Marketable yields of Atlantic, AFSC8801-2 and B0856-4 were significantly greater than that of Superior while the marketable yield of several other varieties and clones were significantly lower. The high percentage of tubers greater than 3.25 inches noted for AFSC8801-2 warrants additional testing in this growing

area where the large-sized tubers bring a premium. The sunburn noted for this variety suggests that some cultural adjustment may be needed to provide adequate soil cover. External defects, particularly sprouting and second growth, were more prevalent than in recent years. Internal color of Bettina was bright yellow but external defects may be excessive. Severe susceptibility of Pentland Squire to internal heat necrosis could qualify this variety as a new standard for this defect.

Chip Trial. Chip scores of most entries, including Atlantic were darker than usual. High marketable yield and attractive tubers of B0763-15 and B0766-3 suggest potential for dual purpose, both fresh market and chip stock. NY101 appears worthy of additional evaluations as a late maturing fresh market selection.

Red-skinned Trial. The extended period of cool weather early in the growing season may have promoted development and maintenance of darker red skin color in 1995 than in the past two years. In addition to adequate total tuber yield, attractive tubers, and dark skin color, the large tuber set of ND1871-3R resulted in a high percentage (43%) of tubers less than 1.88 inches in diameter. This would be advantageous for the red-skinned niche market in which a higher percentage of small tubers is preferred. Both ND1871-3R and Red Ruby warrant additional evaluation.

Russet Trial. A greater percentage of tubers in the > 8 oz size categories occurred in this trial than in previous years. Clones that exhibited exceptional tuber appearance, light russeted skin texture and a greater percentage of tubers over 8 oz were B9922-11 and B0835-11. The two long white entries in this trial were disappointing in that the tuber appearance was too rough and irregular for an attractive count box pack.

Transgenic Trial. Differences in vine size and maturity ratings of the Atlantic entries (Table 7) were not reflected in yield or average tuber weight (Table 6). However, SuBT2-5 appears to be consistently different from either SuBT2-7 or either of the Superior non-transgenic entries (checks) in vine size and maturity (Table 7). Tubers of both transgenic Superior clones were longer than the checks and tubers of SuBT2-5 were significantly more rough and irregular than the Superior checks (tuber appearance, Table 7). Since Superior is grown primarily for fresh market, this problem with less attractive tubers of SuBT2-5 may be a serious concern for growers. Additional evaluations with input

from growers/buyers are needed, particularly for the transgenic Superior clones. In general, the Atlantic transgenic clones were quite similar to the check. With the highest marketable yield and specific gravity, AT04-06 appears to be the Atlantic clone most warranting additional evaluation.

Ratings.

Vine and tuber ratings were completed using the rating system of the U. S. Department of Agriculture regional project NE107. For vine ratings, maturity: 1 = senesced, 9 = totally green; air pollution: 1 = defoliated, 9 = no visible symptoms. For tuber ratings, shape: 1 = round, 5 = oblong, 9 = very long (cylindrical); appearance: 1 = very poor, 9 = excellent; skin maturity: 1 = totally peeled during harvest and grading, 9 = skin intact, and tuber defects: 1 = severe, 9 = none. Ratings of heat necrosis were made on 20 tubers in the size range 2-1/2" to 3-1/4".

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Virginia Table 1. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of round-white trial grown for 116 days at Painter, Virginia, 1995.

Clone ¹	Yield > 1-1/2" cwt/A	Marketable Yield		Size Distribution ² by class (%)				Culls %	Specific Gravity ³	Chip Color ⁴ Days After Harvest
		cwt/A	Percentage of std.	1	2	3	4			
Alisa	336	165	55	42	26	23	0	10	1.073	--
Atlantic	413	373	125	8	13	57	21	1	1.083	5
Bettina	367	264	88	20	22	25	5	8	1.076	6
Carlingford	388	253	85	30	31	34	0	5	1.065	--
Maris Bard	312	249	75	11	16	53	11	9	1.066	7
Morene	408	333	111	15	24	56	2	4	1.074	--
Navan	416	316	106	23	28	45	4	1	1.080	6
Pentland Squire	367	291	97	15	19	55	5	5	1.072	--
Rocket	361	269	90	24	24	43	6	3	1.070	--
Saxon	371	261	87	18	17	46	6	13	1.063	--
Superior (std)	342	300	100	10	20	59	9	2	1.069	7
AF1291-43	284	206	69	17	17	50	6	11	1.068	--
AF1559-5	400	335	112	14	24	57	3	2	1.069	--
AF1565-12	334	250	84	23	25	47	3	3	1.060	--
AF1606-2	310	248	83	19	23	53	4	1	1.068	6
AF1658-5	412	360	120	9	15	57	16	3	1.077	6
AFSC8801-2	405	380	127	4	5	50	39	2	1.065	7
AFSC9007-3	302	211	71	28	36	34	0	2	1.063	7
BO717-1	298	186	62	36	31	31	1	1	-----	--
BO856-4	440	391	131	10	15	55	19	1	1.065	5
BO887-5	274	245	82	9	13	60	16	1	1.072	4
B1017-7	368	315	105	13	22	56	7	2	1.076	6
B1171-2	394	267	89	31	30	36	1	2	1.060	--
B1213-6	291	121	41	59	27	13	0	1	1.066	--
Waller-Duncan										
LSD (k=100)	36	42								

¹Planted March 16, harvested July 10, 1995.

²Size distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25."

³Determined by weight in air/weight in water method.

⁴Unreplicated samples: 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable.

Virginia Table 2. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of chip trial grown for 116 days at Painter, Virginia. 1995.

Clone ¹	Yield > 1-1/2" cwt/A	Marketable Yield		Size Distribution ² by class (%)			Cull %	Specific Gravity ³	Chip Color ⁴ Days After Harvest
		cwt/A	Percentage of std.	1	2	3			
Atlantic (std)	391	346	100	10	17	55	2	1.079	4
Sierra	415	317	92	23	25	48	1	1.067	6
Superior	318	265	77	14	21	58	2	1.070	6
AF1480-5	365	310	90	13	19	59	2	1.074	5
AF1556-3	289	239	70	16	22	55	2	1.070	6
AF1668-60	301	270	79	10	17	71	0	1.068	3
BO178-34	354	311	90	9	11	58	3	1.044	3
B0257-12	320	251	73	20	32	43	2	1.075	5
BO763-15	362	330	72	7	9	54	2	1.072	4
B0766-3	433	388	113	9	14	52	1	1.079	4
B1098-29	267	220	64	17	22	53	1	1.083	5
NY101	391	345	100	10	17	58	1	1.066	6
NY102	301	228	66	24	34	40	1	1.075	4
NY103	363	301	87	9	9	46	9	1.065	6
NY105	380	308	90	17	24	53	2	1.069	4
Waller-Duncan									
LSD (k=100)	36	33							

¹Planted March 16, harvested July 10, 1995.

²Size distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = > 3.25."

³Determined by weight in air/weight in water method.

⁴Unreplicated samples: 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable.

Virginia Table 3. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of red-skinned trial grown for 117 days at Painter, Virginia, 1995.

Clone ¹	Yield	Marketable Yield		Size Distribution ²				Culls	Specific Gravity ³	Skin Color	Comments	
	> 1-1/2"	cwt/A	cwt/A	Percentage of std.	by class (%)							
			1	2	3	4	%					
Cherry Red	156		86	72	43	34	22	0	2	1.067	red	sl. irreg.
Dark Red Norland	156		76	64	39	33	17	1	11	1.062	lt. red	not exc.
Eric	218		134	112	37	33	28	0	2	1.061	lt. red	lumpy
LaRouge	240		159	133	28	24	38	4	6	1.059	pink	rough
Red Cloud	179		128	107	25	30	40	3	4	1.061	pink	
Red Lasoda	228		177	148	21	23	50	5	2	1.057	lt. red	large
Red Pontiac (std)	240		120	100	47	24	24	2	3	1.053	lt. red	rough
Red Ruby	216		133	111	36	30	30	2	3	1.060	red	variable
Rideaux	198		143	120	27	26	40	5	2	1.066	red	smooth
B0811-13	203		159	133	20	26	47	5	3	1.065	red	netted
B0985-1	123		54	45	53	33	8	2	4	1.059	br. red	
ND 1871-3R	220		120	100	43	29	23	3	2	1.054	red	
Waller-Duncan												
LSD (k=100)	25		26									

¹Planted March 16, harvested July 11, 1995.

²Size distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = > 3.25."

³Determined by weight in air/weight in water method.

Virginia_Table 4. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of russet trial grown for 117 days at Painter, Virginia, 1995.

Clone ¹	Yield		Marketable Yield		Size Distribution ²				Culls	Specific Gravity ³	Skin Texture	Comments
	> 1-1/2"	cwt/A	cwt/A	Percentage of std.	1	2	3	4				
BelRus (std)	128	55	100	56	41	2	0	1	1.067	heavy	small	
Goldrush	277	171	311	34	49	11	2	5	1.060	mod.	sl. irreg.	
AF1698-4	198	139	253	18	53	15	3	11	1.055	long wh.	irreg.	
AF1701-3	333	185	337	28	42	13	2	16	1.050	mod.	blocky	
AF1706-15	160	47	86	37	50	2	4	7	1.060	heavy	irreg.	
AF1706-18	158	91	166	67	28	0	0	5	1.058	heavy	small	
AF1718-1	205	103	188	48	46	4	0	2	1.067	mod.	small	
B9922-11	260	197	359	20	54	18	4	4	1.068	light	nice	
B0835-11	317	189	344	30	44	20	3	3	1.061	light	nice	
B1004-8	242	145	264	35	52	8	1	5	1.062	mod.	small	
B1157-5	163	70	128	54	41	1	0	4	1.069	long wh.	sl. irreg	
Waller-Duncan												
LSD (k=100)	98	37										

¹Planted March 16, harvested July 11, 1995.

²Size distribution 1 = <4 oz; 2 = 4-8 oz; 3 = 8-12 oz; 4 = 12-16 oz.

³Determined by weight in air/weight in water method.

Virginia Table 5. Plant and tuber characteristics and tuber defects for round-white, red skinned, and russet clones grown at Painter, Virginia, 1995.

Clone	Vine ¹		Tuber			Tuber Defects ²				Heat Necrosis	
	Maturity	Air Pollu- tion	Shape	Appear.	Skinn Matur.	Heat Sprouts	Sun- burn	Second Growth	Growth Crack	# of Tubers	Rating
Advanced Round White Trial											
Ailsa	7	7	3	5	5	5	9	5	9	0	9
Atlantic	7	7	2	7	6	9	9	9	9	4	7
Bettina	9	9	3	5	5	9	7	5	8	0	9
Carlingford	7	7	3	5	7	7	9	6	0	0	9
Maris Bard	3	6	4	7	8	9	5	7	9	3	5
Morene	8	6	4	5	6	9	9	5	9	0	9
Navan	9	9	3	6	5	7	9	9	9	8	5
Pentland Squire	8	8	4	5	5	7	9	6	9	18	4
Rocket	4	6	3	7	7	7	9	9	9	2	5
Saxon	6	7	4	6	6	4	7	3	3	0	9
Superior	2	5	3	6	8	9	9	9	9	0	9
AF1291-43	5	6	4	5	5	4	7	7	9	0	9
AF1559-5	5	5	3	5	6	7	6	9	9	0	9
AF1565-12	4	4	3	6	8	9	4	9	9	0	9
AF1606-2	2	2	3	7	6	9	9	9	9	0	9
AF1658-5	8	7	4	7	7	9	9	9	9	0	9
AFSC8801-2	7	5	4	7	6	9	4	9	9	0	9
AFSC9007-3	2	3	2	7	7	9	9	9	9	0	9
BO717-1	5	5	3	6	6	9	9	9	9	2	8
BO856-4	4	5	2	7	6	9	7	9	9	0	9
BO887-5	5	7	2	7	7	9	8	9	9	0	9
BI017-7	5	7	2	7	7	9	8	7	8	0	9
BI171-2	6	8	4	6	5	9	8	9	9	0	9
BI213-6	3	4	6	4	7	9	9	9	9	0	9
Chip Trial											
Atlantic	6	7	2	7	6	9	9	9	9	1	4
Sierra	6	7	3	6	6	9	9	8	9	0	9
Superior	2	6	3	6	8	9	9	8	9	0	9
AF1480-5	5	7	4	6	5	9	6	7	9	0	9

Virginia Table 5. (continued)

Clone	Vine ¹		Tuber			Tuber Defects ²				Heat Necrosis	
	Maturity	Air Pollu- tion	Shape	Appear.	Skinn Matur.	Heat Sprouts	Sun- burn	Second Growth	Growth Crack	# of Tubers	Rating
AF1556-3	3	3	3	8	7	9	7	9	8	0	9
AF1668-60	5	6	2	7	6	9	9	9	9	0	9
BO178-34	6	7	3	6	5	7	6	7	8	0	9
BO257-12	3	5	3	8	8	0	8	7	8	0	9
BO763-15	7	8	4	8	6	7	8	8	9	0	9
BO766-3	5	8	2	7	5	9	9	8	9	0	9
B1098-29	9	8	2	6	3	7	9	9	9	0	9
NY101	7	7	3	7	4	9	9	9	8	0	9
NY102	8	6	2	8	6	9	9	9	9	0	9
NY103	5	8	4	7	6	9	6	9	9	0	9
NY105	5	8	5	6	6	9	7	9	9	0	9
Cherry Red	--	--	3	6	7	9	9	9	7	0	9
Dk. Red Norland	--	--	3	6	5	9	9	8	9	0	9
Eric	--	--	3	5	6	9	9	9	9	0	9
LaRouge	--	--	2	6	6	9	7	7	9	2	6
Red Cloud	--	--	2	5	5	9	9	9	9	0	9
Red Lasoda	--	--	3	7	7	9	9	9	9	0	9
Red Pontiac	--	--	3	6	7	6	9	7	9	0	9
Red Ruby	--	--	3	5	5	9	9	7	9	0	9
Rideaux	--	--	3	7	6	9	9	9	9	0	9
BO811-13	--	--	2	7	7	9	9	7	9	0	9
BO985-1	--	--	2	6	8	9	9	6	9	1	8
ND1871-3R	--	--	2	7	6	9	8	7	9	0	9
BelRus	--	--	7	7	8	Russet Trial		9	9	1	8
Goldrush	7	7	7	6	7	7	9	7	9	0	9
AF1698-4	9	7	6	4	4	6	6	7	6	0	9
AF1701-3	7	8	7	7	5	3	9	7	5	0	9
AF1706-15	7	8	7	5	4	3	9	9	7	0	9

Virginia Table 5. (continued)

Clone	Vine ¹		Tuber			Tuber Defects ²				Heat Necrosis	
	Maturity	Air Pollu- tion	Shape	Appear.	Skin Matur.	Heat Sprouts	Sun- burn	Second Growth	Growth Crack	# of Tubers	Rating
AF1706-18	6	8	7	4	4	6	9	9	9	0	9
AF1718-1	5	5	6	7	6	9	9	9	9	0	9
B9922-11	6	7	7	7	7	8	9	8	7	0	9
BO835-11	6	7	6	7	6	7	9	9	9	1	7
B1004-8	5	7	6	6	7	7	9	7	7	0	9
B1157-5	--	--	5	6	8	6	9	9	9	0	9

¹Vine ratings taken 79 days after planting. Infestation of European corn borer in mid-June resulted in early vine senescence of most entries in the red-skinned trial.

²Twenty tubers sampled.

Table 6. Total yield, marketable yield, size distribution, and specific gravity of transgenic trial grown for 113 days at Painter, Virginia, 1995.

Clone	Yield (cwt/A)		Average tuber wt ² (grams)	Specific Gravity ⁴	Size Distribution ³			
	Total	Marketable ¹			1	2	3	4
Atlantic								
ATO4-06	401	356	164	1.090	10.4	15.4	52.7	20.7
ATO4-27	369	331	158	1.088	9.4	13.9	52.3	23.4
ATO4-30	378	328	143	1.087	12.4	16.6	50.9	18.9
ATO4-31	368	330	156	1.087	9.3	14.7	50.4	24.3
ATO4-36	377	318	139	1.088	13.8	18.2	52.1	13.9
AT4001	395	312	151	1.086	9.9	14.7	51.3	23.0
AT4001A	394	351	130	1.087	9.8	14.3	46.0	28.7
Waller Duncan	25	25	NS	.004	Wilks' Lambda P = 0.01			
(P=0.05)					Pillai's Trace P = 0.01			
Superior								
SuBT2-5	374	330	183		5.2	9.9	59.4	19.0
SuBT2-7	306	252	146		10.2	19.0	56.4	7.1
SuControl A	327	287	161		6.8	12.8	58.4	16.5
SuControl	322	284	156		7.0	12.4	58.4	17.3
Waller Duncan	18	17	18		Wilks' Lambda P = 0.01			
(P = 0.05)					Pillai's Trace P = 0.01			

¹ Yield of tubers > 1.88" diameter.

² Calculated using data from 5 replications.

³ Size distribution 1 = 1.5 - 1.88"; 2 = 1.88 - 2.5"; 3 = 2.5 - 3.25"; 4 = > 3.25".

⁴ Determined by weight in air/weight in water method for Atlantic clones only.

Table 7. Plant and tuber characteristics and tuber defects for transgenic Atlantic and Superior grown at Painter, Virginia, 1995.

Clone	Vine ¹		Tuber ²			Tuber Defects ³			Heat Necrosis ⁴		
	Size	Maturity	Shape	Size	Set	Appearance	Heat	Second	Growth	Cracks	Rating
							Sprouts	Growth	Growth		
Atlantic											
AT04-06	6.8	5.7	2.0	7.4	7.7	7.0	8.7	8.8	8.8	15.0	8.5
AT04-27	6.9	5.5	2.3	6.8	7.5	7.1	9.0	8.8	9.0	20.0	8.5
AT04-30	6.8	5.8	2.0	7.0	7.3	7.0	8.8	8.8	8.8	23.3	8.4
AT04-31	6.3	5.9	2.0	7.3	7.5	7.0	8.9	8.6	8.6	30.0	8.3
AT04-36	6.6	5.8	2.0	7.3	7.3	7.0	8.8	8.7	8.8	18.3	8.6
AT4001	6.9	5.8	2.0	7.6	7.5	6.9	9.0	8.6	8.4	15.0	8.6
AT4001A	6.9	5.4	2.0	7.4	7.4	7.0	8.6	8.7	8.5	6.7	8.8
Waller Duncan (P=0.05)	0.4	0.4	NS	0.8	NS	NS	NS	NS	NS	18.3	NS
Superior											
SuBT2-5	6.6	5.7	3.6	6.8	6.3	6.0	8.9	7.4	9.0		
SuBT2-7	5.0	6.9	3.8	6.4	6.2	6.4	8.7	7.4	8.6		
SuControl A	4.9	7.0	3.1	6.8	6.5	6.9	8.9	8.4	9.0		
SuControl	5.4	6.7	3.1	6.3	6.2	6.8	8.6	8.1	8.8		
Waller Duncan (P=0.05)	0.6	0.4	0.3	0.5	NS	0.6	NS	0.7	NS		

¹ Vine ratings taken 94 days after planting. Subjective ratings: 9 = exceptional (size) or later (maturity), 1 = small (size) or early (maturity).

² Tuber ratings taken during grading. Shape: 9 = very long, 1 = very round; Size and Set: 9 = large, 1 = small; Appearance: 9 = exceptional 1 = poor.

³ Tuber defect ratings: 9 = none, 1 = excessive.

⁴ 10 tubers cut in each of six replicates.

